

Przemysław Zdybek
Uniwersytet Opolski, Wydział Nauk Społecznych, Instytut Psychologii
<https://orcid.org/0000-0001-6291-3495>

Magdalena Joanna Pysz
Uniwersytet Opolski, Wydział Teologiczny
<https://orcid.org/0000-0003-3707-7143>

Testing psychological (GAM) model of aggression on the men's sample

Substance addiction, steroids use, personality traits, free will,
and temporal perspective as predictors of aggression

Testowanie psychologicznego (GAM) modelu agresji na próbie mężczyzn

Uzależnienie od substancji, stosowanie sterydów, cechy
osobowości, wolna wola i perspektywa czasowa
jako predyktory agresji

Abstract

The study was carried out to verify how psychological models are able to explain the phenomenon of aggression among men. There is a lack of research that try to test many factors of aggression in a holistic way. We try to enrich the results of research on male aggression by recognizing to what extent factors that have not been studied so far, such as willpower, temporal orientation, or the use of drugs or steroids, explain aggression in the group of men. The sample of men (N = 131) was selected deliberately in terms of substance dependence, steroid use and being a free from substance. Ten Item Personality Inventory (TIPI) was used to measure five personality factors. The Zimbardo Time Perception Questionnaire (ZTPI) and the Start and Stop Control Questionnaire were used to measure temporal orientation and willpower, respectively. Correlation and hierarchical regression analysis were used for the statistical analyses. The results

confirm the impact of personality, willpower construct and temporal orientation on the male aggression. We did not found that steroid use can be connected with aggression phenomena, but results support the role of addiction. The research, however, has its limitations and the main ones are a small research sample and specific sample selection, which makes generalization of the results difficult.

Keywords: men aggression, personality, addictions, temporal orientation, willpower.

Abstrakt

Przeprowadzono badania w celu sprawdzenia, w jaki sposób modele psychologiczne są w stanie wyjaśnić zjawisko agresji mężczyzn, którzy zażywają narkotyków, sterydów lub nie stosują takich substancji. Próbka mężczyzn (N = 131) została wybrana celowo pod względem uzależnienia od substancji, stosowania sterydów i bycia wolnego od substancji. Do pomiaru pięciu czynników osobowości wykorzystano dziesięciopunktowy spis osobowości (TIPI). Do pomiaru orientacji czasowej wykorzystano Kwestionariusz Percepcji Czasu Zimbardo (ZTPI), a do pomiaru siły woli wykorzystano Kwestionariusz Kontroli Start-Stop. W analizach statystycznych zastosowano analizę regresji hierarchicznej i modelowanie równań strukturalnych. Wyniki potwierdzają wpływ osobowości, konstrukt siły woli i orientacji czasowej na męską agresję. Wyniki nie wyjaśniają jasno roli uzależnienia w zwiększaniu agresywności. Badania mają jednak swoje ograniczenia, a główne z nich to mała próba badawcza i konkretny dobór próby, co utrudnia uogólnienie wyników.

Słowa kluczowe: agresja mężczyzn, osobowość, uzależnienia, orientacja czasowa, siła woli.

1. Aggression and aggressiveness

In biological terms, aggression is innate, instinctive and automatically triggered by the environment under the influence of appearing “triggers” and inhibited by “counter-triggers” as assumed in his theory by Lorenz (1996). From an evolutionary point of view, aggression is inherent in our nature and performs an adaptive function, especially for a male (Buss, 1961; Wojciszke, 2012). Adaptive aggression is when the chance of survival and the probability of reproductive success increase. In the context of the maladaptive form of aggression, among men between the ages of 15 and 29, the pursuit of war is mentioned. Daily and Winson call it “the young man syndrome” that grows with unemployment. A man without a job feels that he is unable to get the goods he needs to acquire a partner, therefore aggression appears in him, the aim of which is to obtain as

many goods as possible. A distinction is made between the concept of “aggression” and “aggressiveness”. Aggression means attacking and wanting to harm someone. There is aggression in positive and negative forms. Negative aggression means socially unacceptable and hostile behaviour, while positive aggression is socially acceptable, e.g. assertiveness (Farnicka, Liberska, Niewiedział, 2016). Aggressiveness as adaptive behaviour is not just a simple instinct, it is rather a set of psychological mechanisms, because it also largely depends on the situation (Wojciszke, 2012). In the context of family life, aggression, which is a part of the phenomenon of violence, is one of the most serious social problems. The use of violence and aggression can lead to family dysfunction or its breakup (Rode 2010).

In the context of research on aggression, an integrative model is GAM (General Aggression Model). The model is an attempt to integrate several theories of micro aggression into one coherent theory (Bushman, Anderson, 2002). The authors distinguish three main factors of the model: a) inputs – people and situations; b) routes – feelings, affect, and agitation that affect input variables; c) output – situation assessments and decision processes. In the context of “inputs”, the authors divide them into personal and situational factors. Personality factors include such traits as personality, attitude, and genetic predisposition. All personal characteristics are consistent. And situational factors include situation aggressive effects, provocation, frustration, pain and discomfort, encouragement that affect cognition, affect and agitation. The cognitive path is feelings, affect and arousal. Among the cognitive input variables that influence aggressive behaviour, the authors mention hostile thoughts and scripts. Affect in the GAM concept consists of mood and emotions, the expression of a motor response. Agitation can make aggression appear in three ways. 1) Agitation that comes from an irrelevant source may contribute to strengthening the dominant tendency to aggression. 2) Arousal from an irrelevant source can be considered a provocation that expresses aggressive behaviour motivated by anger. 3) High and low levels of arousal can lead to aversion and stimulate the onset of aggression (Bushman, Anderson 2002).

2. Step one “inputs” – Personality factors

Based on the General Aggression Model, the first stage of aggression development depends on personality and situational factors. For Anderson and Bushman, personality factors are all the traits of a person that he brings to a situation, such as personality traits, attitudes, and biological predispositions. Aggres-

siveness can be understood as a personality trait that influences the processes of self-regulation. Personality is a relatively constant set of various features that is formed on the basis of the interaction of the individual with society (Strelau, 2000). Research by Ann Bettencourt and colleagues (2006) showed that aggressiveness, irritability, anger, emotional susceptibility, tendency to ruminate, type A personality, impulsiveness and narcissism – in addition to situational factors – can be predictors of anger. There is a strong correlation of the results of these studies with the features that occur in the Big Five, which includes: neuroticism, extraversion, openness to experience, agreeableness, conscientiousness. The Big Five are characterized by repeatability in research, stability, relationships with other theories, they occur in people living in different cultures and have a biological basis (Costa and McCrae, 1992a). Neuroticism is understood as a trait which to a large extent means a limited ability to control their impulse and emotions in a person. People who have this trait often respond in anxious, aggressive and hostile ways, which may be due to their low sense of value. It turns out that a high level of aggressiveness and irritability coincides with neuroticism (Zawadzki et al., 1998). Extraversion is a feature that refers to dominance in social contacts. A large level of extraversion characterizes social persons who are friendly in the interpersonal contact. Extrovert people have a tendency to dominate, which may determine aggressive behaviour, as confirmed by research (Pilch, 2013). Another feature is openness to experience. People with a high level of this feature in their lives are guided by the desire to explore the world, curiosity and interest in aesthetics. In addition, they are inclined to question authorities, and in their conduct they are unconventional. People with a low level of openness to experience are guided by tradition and conservative views. Research on aggression among motorcyclists indicates that people with a low level of openness to experience are more aggressive than those who show a high level of this trait (Znajmiecka-Sikorska, Sałagacka, 2018). In research of Barłóg (2015) low openness to experience is connected with a tendency to addiction. Another feature that was taken from the Big Five is agreeableness, which is defined as a tendency to help, seeking mild solutions to conflict situations. Settlements motivate their willingness to help by believing in a similar attitude of other people. In contacts with other people, the people possessing this trait are very altruistic, not focused on rivalry or hostile actions (Strelau, 2000). Low levels of aggressiveness and irritability are strongly correlated with high levels of agreeableness. This is confirmed by research by Britt and Garrity (2006) and Dahlen and White (2006) on aggression on the road. The last feature mentioned in the Big Five is diligence, which means a strong motivation of the individual to act in order to achieve their goals. Conscientious people are punctual, persistent

and prudent (Zawadzki et al., 1998). A high level of conscientiousness is associated with a greater ability to control aggressive behaviour, as confirmed by other studies (Piasecka, 2017). It is recognized that personality formation takes place in the family. If there is regular violence and aggression in the family, it has a negative impact on the process of personality formation. A child experiencing childhood violence can transfer aggressive behavior to the new family system that he begins to create. Researchers indicate that this phenomenon leads to inheritance of dysfunctional patterns (Młyński, 2012).

3. Situation factors – addictions and aggression

All addictive substances, e.g. alcohol, stimulants, anabolic steroids are used to overcome unpleasant emotions. As a result, perception is impaired and mood changes. The level of serotonin also drops, the low level of which causes depression, problems with sleep, aggression and suicidal tendency. Substance dependence can lower the processes of self-control. Low serotonin levels affect the self-regulation mechanism that increases the level of aggression (MossRalph, Tarter 1993).

The link between drug abuse, alcohol abuse and violence remain unknown today. While there is some evidence for the influence of certain drugs on the development of violent behavior (Marshall et al., 2008; Martin and Bryant, 2001), the relationship between substance use and violent behavior is complex and rather suggestive than conclusive (Boles and Miotto, 2003; Fagan, 1993). In studies on the influence of addiction to psychoactive substances on aggression, it is concluded that young age contributes to the increase in aggressive behavior. Almost 40% of the surveyed addicts have problems with inhibiting aggression. Aggression in this study of addicts was most often directed towards the immediate family, friends and partners (Fernández-Montalvo, López-Goñi, Arteaga, 2012). The risk of taking drugs can increase aggressive behavior. Anderson and Bushman (2002) note that the effects of addiction to aggression are indirect, not direct. Research related to the General Aggression Model shows that aggressive thoughts and behavior related to addictions fit the explanations contained in this model.

4. Temporal orientation – a subjective perspective of time perception

Time orientation for Łukaszewski means understanding time as (1984, p. 159): "A hard-to-grasp process by which a person can judge how long something lasts,

what lasts longer and what is shorter, how much time has already passed and how much time is left". The three basic categories are past, present and future. Each of them is equally important and allows you to organize and perceive life and the world by answering the questions: who I was, who I am, who I will be, while determining the direction of our activities. The subjective approach of man to time (time orientation) plays an important role in shaping his personal life. It is the basis of psychological processes and attitudes.

The guarantee of optimal functioning is awareness of the existence of all time perspectives and flexible, simultaneous management while making decisions. A strong focus on any of the perspectives is not healthy for mental functioning, negative (past and present) perspectives are particularly negative (Łukaszewski, 1983). In the approach of Zimbardo and Boyd, psychological time is a mental representation, consisting of a time horizon that includes individual dimensions (past, present and future) along with emotional assessment. More specifically, individual perspectives can be seen as positive and negative, e.g. the past can be positive and negative, and the experience of the present can be perceived through the prism of pleasant and unpleasant events. Among the works related to aggression and temporal orientation, it was shown that people with past-negative temporal orientation are more prone to aggression. Past-positive orientation indicated the opposite trend. In turn, the present-fatalistic temporal perspective was closely related to the tendency to theft, anxiety and depression (Zimbardo and Boyd 1999). And present-hedonistic temporal orientation is associated with creativity and openness to experience, at the same time with the tendency to take risky behaviour and gambling (Hodgins and Engel, 2002). Future-oriented temporal orientation indicates a positive correlation with high performance and a low addiction tendency (Diener, 2000).

5. Step two – “routes”

The second stage focuses on three factors that influence decision-making about an aggressive or non-aggressive outcome. The person and situation influence cognition, affect, and arousal. These three variables influence a person's current internal state. The change in these types causes the probability of aggression to change. There may be times when your anger can provoke hostile thoughts that make you aroused. There is no strict order in which these three variables appear. Cognition. External factors may influence the activation of script content with aggressive content. Access to violent computer games can activate aggressive scripts. Affect. The input variables influence our emotions.

Examples of such affects are excessively high temperatures and pain that increases aggression. Arousal. There are three ways of arousal. First, it can arise from irrelevant sources, such as exercise, which can cause anger that can turn into aggression (arousal transfer theory). The second way to induce arousal is to be aggressive (provocation). The third way is to activate aversive states that increase aggressive affect and cognition (Bushman and Anderson, 2002).

6. Step three “output” – self-control as a mechanism

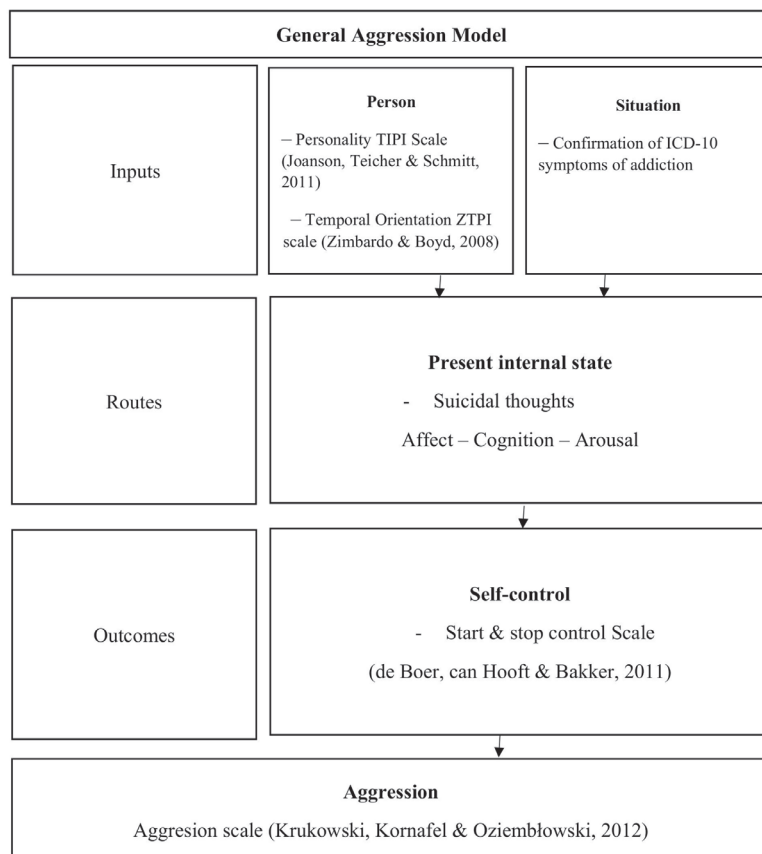
Self-control is associated with the ability to refrain from certain behaviours in favor of others in order to better adapt to the environment (or to a lesser level – the situation). These activities may concern human thoughts, emotions, desires and pursuit of goals in accordance with the personal life plan. The basic form of self-regulation is “inhibiting”, i.e. intervention in the course of the process that goes against our expectations – abstaining from certain activities in accordance with the program previously established. As indicated by Buczny and Międzybrodzka (2014), the concept of Carver and Scheier (2003), in addition to its complexity, assumes that self-regulation is a process that takes place at various levels, from the transmission of information by neurons to feedback that directs action and supports self-motivation. Self-regulation takes place in parallel and this process coordinates two types of organization in time. The self-regulation process is based largely on exercising control over standards, e.g. of the needs, value system, life goals, sociocultural norms and also regarding personal standards of the “ideal self” – where they perform an important function and in addition are hierarchical and related to each other. According to Baumeister, this process requires a special kind of strength – “will power”, which is a human resource. Describing the concept of self-control, de Boer refers to numerous studies, e.g. self-control is defined as the control of the individual over himself (Muraven and Baumeister 2000) and applies to both thoughts, emotions, actions and attention. As the results of the research indicate, it is very important and useful in many different areas of human life, being an important factor affecting success or not – even with eating disorders and mental health (Tangney, Baumeister and Boone 2004) also with physical health (De Ridder, De Wit 2006) and crucial for addiction or aggression (DeWall et al. 2007). The above studies show that self-control is of paramount importance in the ability to inhibit one's aggression. Regarding the results, research was carried out (De Boer, Van Hooft and Bakker, 2011) which showed that the distinction between self-control to “stop” – to inhibit behavior and “start” –

to initiate behavior is appropriate and useful. However, the author implies that a high level of braking does not necessarily also mean a high control run. These values may be different for each man (e.g. start and stop self-checks may be of similar strength or one of them may dominate). Behaviours can relate to various forms of self-control: start or stop, e.g. drinking, smoking, learning, exercising. Inhibiting control was negatively linked to alcohol consumption, smoking and aggression. Starting control was positively linked to learning and exercise (De Boer, Van Hooft and Bakker, 2011). Shaping self-control is very strongly associated with the educational style of family functioning. Bourind distinguishes three styles of upbringing: 1) permissive (liberal) – characterized by limited control, no requirements, inconsistencies, upbringing stress; 2) authoritative (democratic) – a warm attitude towards the child and his/her desires but carrying out controls respecting the child's borders, so-called "rational education", 3) authoritarian – based on obedience, severity, excessive requirements and control, so-called "conservative education". A high level of aggression and a low level of willpower determine the autocratic style. The lowest level of aggression and the greatest strength of will determines the style of democratic upbringing. Diana Bourind (1991, see: Schaffer, 2006) indicates that democratic upbringing influences shaping a higher level of competence in a child and the strength of his/her will.

7. Research problems and hypothesis

The above considerations bring the question how many related factors are empirically able to explain the phenomenon of aggression in a group of men. To what extent can addiction or taking steroids in sport increase aggression? Personality as dimensions of the Big Five theory and temporal orientation are important factors. The last group of variables is willpower. The presented research is performed on a specific male sample to include the factor of substance addiction. We assume that (H1) confirming addiction and steroid use will be a positive predictor of aggression. In addition, (H2) emotional stability, openness and diligence will be a negative predictor of aggression, extraversion – positive. (H3) Stop control dimension will be a negative predictor of general aggression. Temporal orientation as a personality dimension should be a predictor of aggression. (H4) Past negative perspective and present hedonistic perspective will be positive predictor of aggression. The graphic model of aggression predictors was described in picture 1.

Picture 1. Theoretical model of Aggression predictors



8. Research

8.1. Participants

131 male took part in the study (age $M = 25.84$; $SD = 6.15$). Among participants $N = 24$ declare to be married; $N = 90$ unmarried, $N = 2$ divorced, $N = 15$ declare to be in informal relationship. A group of 43 participants confirmed drug addiction ($N = 29$ drugs, $N = 14$ alternate intake of many substances). In addition, they were also asked about using illegal anabolic steroids to improve their sport appearance, which was confirmed by $N = 29$ men. At the time of the study, 10 people confirmed suicidal thoughts. Higher education was declared by $N = 33$, secondary education by $N = 71$, other participants declared a basic or professional education level.

8.2. Research methods

The respondents received a questionnaire, which consists of two parts, preceded by a short introduction and declaration of anonymity of the survey, as well as a request addressed to the respondents to complete the questionnaire. The first part concerns statistical data, type and frequency of the sport discipline and contains questions about using anabolic steroids or other psychoactive substances, whether the test person uses and how long he has used them, and about current and previous doses. The second part is a tool constructed on the basis of diagnostic criteria of addiction syndrome according to ICD-10. Participants can confirm 0–6 addiction symptoms. It is required to identify 3 or more answers to “yes” to confirm addiction. Moreover, participants who confirm using steroids for sport doping beside direct questions about confirming substance were asked to write the specific name of the medicine to confirm using steroids.

The questionnaire on the perception of time ZTPI (Zimbardo, Boyd 2009; p. 52) examines the attitude that each person has towards time, in relation to his life and all activities related to its course. The tool covers five scales, representing five perspectives: 1) past negative; 2) past positive; 3) present-hedonistic; 4) present-fatalistic; 5) future perspective. The questionnaire consists of 56 questions in the form of statements (including five inverted coding), which should be addressed on a five-point scale, from “completely untrue” to “very true”. The statements are preceded by a question referring to the entire questionnaire: “How typical or true is it to me?” With this tool, you can find out what time perspectives are currently used by man in organizing personal reality and what is the distribution of these perspectives, e.g. which dominate (the highest result) and which are sporadically activated (the lowest result).

The Start and Stop control questionnaire (BJ De Boer, EJ Van Hooft, AB Bakker) consists of two scales: 1) STOP control – measuring the intensity of short-term activities that are focused on attractions and pleasures, which has undesirable consequences (related to braking, refraining from activities that are unfavourable to the individual in the long run); 2) START control – measuring the severity of unpleasant activities in the short term but giving positive effects in the future, has the desired consequences (associated with launching and maintaining activities beneficial to the unit in the long run). The questionnaire consists of 17 affirmative sentences (including six inverted coding items) to which person should respond, expressing the answers on a seven-point scale, from “I strongly disagree” to “I strongly agree.” The tool allows you to determine the level of self-control, which according to the author is divided into two separate

skills: the power of refraining from actions and the power of starting, initiating actions related to the pursuit of a specific goal. The knowledge obtained from the analysis of the results can be helpful in the regulation of activities directed towards the goal, e.g. improve the effectiveness and adequacy of undertaken activities.

The Aggression Questionnaire (Buss, A.H., and Perry, M 1992) translated into Polish by the Amity Institute. The tool is used to measure aggressiveness, consisting of 5 components: 1) physical aggression (PA) – as a behavioural component; 2) verbal aggression (VA) – also as a behavioural component; 3) anger (A) – as an affective component; 4) hostility (H) – constituting the cognitive component; 5) general aggression. The sum of all answers from the above scales is the result of the level of general aggression. The aggression questionnaire contains 29 items, including two inverted questions.

The Personality Questionnaire – Ten Item Personality Inventory (TIPI). Polish adaptation of the TIPI-PL test Sorokowska, A., Słowińska, A., Zbieg, A., Sorokowski, P. (2014). The tool is a shortened version of the personality inventory, created on the basis of the characteristics of the “Big Five” (Costa, McCrae, 1992). It is based on self-description and expressed in 10 sentences containing simple adjectives and terms. The inventory begins with: “I see myself as a person.” The respondent is asked to refer to the self-description provided and express of their assessment on a seven-point scale, from “I strongly disagree” to “I strongly agree”. Each sentence represents one of the poles of the main feature and illustrates its high or low intensity: 1) Extraversion; 2) Agreeableness; 3) Conscientiousness; 4) Emotional stability; 5) .Openness.

8.3. Results

Correlation matrix has been presented below with the data presenting a reliability level of the applied scales using Cronbach's alpha. Correlation matrix is presented in the table 1.

Table 1. Measured variables correlation matrix

8.4. Hierarchical regression analysis

Hierarchical regression analysis was constructed according to GAM model where Person characteristics (Personality traits) is the first step, then situational factors (Steroids use, drugs addiction) are the second step. The next step

	M	SD	Cronbach's alfa	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Addiction Confirmation by ICD-10	,35	,48	-													
2. Past fatalistic perspective	2,97	,75	,79	,324**												
3. Present hedonistic perspective	3,34	,52	,80	,170	,317**											
4. Future perspective	3,39	,56	,89	-,068	-,135	,048										
5. Past positive perspective	3,24	,57	,79	-,191*	,013	,406**	,324**									
6. Present fatalistic perspective	2,52	,68	,79	,266**	,514**	,299**	-,376**	,016								
7. Stop control scale	37,09	7,90	,89	-,252**	-,103	-,167	,549**	,194*	-,170							
8. Start control scale	36,16	7,06	,90	-,079	-,150	,208*	,438**	,307**	-,198*	,263**						
9. General aggression	80,83	18,5	,90	,435**	,499**	,367**	-,196*	-,057	,424**	-,340**	-,129					
10. Extraversion	10,94	2,89	,76	-,185*	-,396**	,212*	,178*	,152	-,284**	,070	,256**	-,193*				
11. Agreeableness	9,90	2,74	,80	-,254**	-,136	,071	,173*	,234**	-,210*	,186*	,237**	-,419**	,315**			
12. Conscientiousness	10,35	2,58	,78	-,115	-,244**	-,064	,418**	,068	-,325**	,333**	,231**	-,283**	,338**	,273**		
13. Emotional stability	9,19	2,71	,77	-,265**	-,452**	-,005	,082	,186*	-,216*	,010	,213*	-,346**	,374**	,209*	,029	
14. Openness	9,12	2,24	,79	,002	-,084	,052	,126	-,064	-,166	,073	,160	-,092	,235**	,099	,455**	-,123

(3) is Present internal state (suicidal thoughts). The last step (4) is self-control as a decision process level. In the 4th step a regression analysis model is explaining more than 50% of variance, which is an acceptable value, the final model is significant (see table 2). The minimum sample size was calculated for 14 predictors using Soper minim sample size for regression analysis (2020, Statistical power level =,8; anticipated effect size = ,15; N=131).

Table 2. Steps and parameters of hierarchical regression

Model	R	R2	R2 change	F change	p change
1	,696	,485	,485	11,293	,000
2	,716	,513	,028	3,428	,036
3	,724	,525	,011	2,809	,096
4	,739	,546	,021	2,709	,071

D-W statistic = 2,137; Bootstrap N=300

Table 3. Presents the results of four steps of hierarchical regression are with the specific data describing coefficients of predictors in four steps.

Model Steps					t
		B	SE	B St.	
1	Extraversion	,548	,550	,085	,996
	Agreeableness	-2,265	,491	-,335	-4,610
	Conscientiousness	-,490	,616	-,068	-,796
	Emotional stability	-1,101	,545	-,161	-2,020
	Openness	-,404	,631	-,049	-,640
	Past fatalistic perspective	6,179	2,228	,253	2,774
	Present hedonistic perspective	10,543	3,008	,297	3,505
	Future perspective	-,950	2,674	-,029	-,355
	Past positive perspective	-2,468	2,581	-,076	-,956
	Present fatalistic perspective	2,299	2,345	,084	,980

2	Extraversion	,580	,540	,090	1,075
	Agreeableness	-2,065	,488	-,306	-4,234
	Conscientiousness	-,469	,605	-,065	-,775
	Emotional stability	-1,003	,537	-,147	-1,868
	Openness	-,466	,624	-,057	-,747
	Past fatalistic perspective	5,874	2,252	,241	2,608
	Present hedonistic perspective	9,327	3,007	,263	3,102
	Future perspective	-1,634	2,634	-,050	-,620
	Past positive perspective	-1,494	2,737	-,046	-,546
	Present fatalistic perspective	1,523	2,331	,056	,653
	Steroids use	2,083	3,178	,047	,656
	Addiction by ICD 10	6,810	2,843	,177	2,395
3	Extraversion	,385	,548	,060	,703
	Agreeableness	-2,136	,486	-,316	-4,397
	Conscientiousness	-,269	,612	-,037	-,440
	Emotional stability	-,785	,548	-,115	-1,433
	Openness	-,463	,619	-,056	-,747
	Past fatalistic perspective	6,764	2,297	,277	2,944
	Present hedonistic perspective	9,510	2,986	,268	3,185
	Future perspective	-2,303	2,645	-,070	-,871
	Past positive perspective	-1,703	2,719	-,052	-,626
	Present fatalistic perspective	,785	2,355	,029	,333
	Steroids use	1,603	3,167	,036	,506
	Addiction by ICD 10	8,528	3,002	,221	2,840
Suicidal thoughts	-8,890	5,305	-,128	-1,676	
4	Extraversion	,382	,541	,060	,707
	Agreeableness	-2,081	,482	-,308	-4,315
	Conscientiousness	-,092	,608	-,013	-,151
	Emotional stability	-,895	,546	-,131	-1,640
	Openness	-,516	,615	-,063	-,839
	Past fatalistic perspective	6,980	2,272	,286	3,072
	Present hedonistic perspective	7,616	3,068	,214	2,482
	Future perspective	,674	3,086	,020	,218
	Past positive perspective	-1,372	2,703	-,042	-,507
	Present fatalistic perspective	1,741	2,357	,064	,738
	Steroids use	1,293	3,136	,029	,412
	Addiction by ICD 10	7,151	3,018	,186	2,369
	Suicidal thoughts	-9,603	5,238	-,138	-1,833
	Stop control scale	-,449	,195	-,192	-2,307
Start control scale	,097	,198	,037	,490	

The results showed that the hypotheses 1-4 were generally verified positively. The last step of hierarchical regression analysis examined whether the declaration of addiction was a significant predictor of aggression. The results in the fourth step showed that drug use is only at the trend level. In addition, personality dimensions – agreeableness and emotional stability (neuroticism) are an important predictor of aggression. Temporal orientation is also an important

factor explaining aggression, and especially present hedonistic and past fatalistic perspective. Moreover, Strength of will (in stop control scale) also significantly explains the phenomenon of aggression.

9. Discussion

Anderson – one of the authors of the models, together with his colleagues, conducted three experiments based on the General Aggression Model. The number of respondents was 130 people. Among them, there were 61 men and 69 women. All participants were students who were asked to abstain from alcohol, caffeine, and tobacco for 12 hours before to the start of the experiment. The students' task was to play one of 10 games. In all three experiments by Anderson et al., a personality measurement was made on the Big Five of Goldenberg. Narcissism and emotional stability were added to the five personality traits. The results of three studies indicated that a low level of agreeableness and conscientiousness makes the level of aggression high. High levels of narcissism and emotional instability also contribute to high levels of aggressive behaviour. In the case of our study, we also studied the personality factors of the Big Five based on the TIPI questionnaire. Our results were similar to Anderson and his team. We expanded our research to include temporal orientation, suicidal thoughts, willpower, and declaration of addiction.

The obtained results confirmed the majority of assumed hypotheses. It has been confirmed that the declaration of drug and steroid addiction is a predictor of aggression but only on the level of trend. This is consistent with other studies in which drugs cause a stronger experience of stimuli but also reduce the skills of managing aggression and frustration. It is also pointed out that drugs are a stronger predictor of aggression than alcohol (Chermack, Fuller, Blow, 2000). Research literature on the use of AAS by men indicates that symptoms of aggression may concern up to 80% of them (Mędraś, Józków 2009). The hypothesis is also confirmed in studies on the influence of specific substances in the processes of disinhibition that contribute to the increased aggression.

Basing on the research results, it can be noticed that personality traits are a predictor of aggressive behaviour. Additionally, basing on analyses, it was shown that neuroticism is a predictor of aggression. High emotional instability leads to unexpected and uncontrolled violent reactions, including aggression. Neurotic people are often guided by anxiety, which can be reflected by aggressiveness towards other people. Lack of ability to cope with stress causes the desire to discharge emotions through aggression (Poraj, 2009). Among personality predictors

of aggression there was also agreeableness, which indicates aggressive behaviour. This is in contradiction with the previous research (Zawadzki, Strelau, Szczepaniak, Śliwińska, 1998). People with low levels of agreeableness are characterized by self-concentration, competitive tendencies, dryness and aggressiveness in contacts. Higher level of agreeableness is negatively associated with physical and verbal aggression as well as anger (Chmielowska-Marmucka, 2019).

In turn, an important predictor of aggression was temporal orientation, among which the current hedonistic and fatalistic perspective was an important explanatory factor. The present hedonic perspective characterizes creative people seeking new sensations but also people with risky tendencies such as addiction and gambling (Paczkowska-Rogacz, 2015). In the perspective of the past fatalistic person, there is a lack of willingness to change while complaining about their own situation. This behaviour often results in frustration and aggression (Zimbardo, Boyd, 2009). It is indicated that emotional states such as anxiety, anger and aggression are characterized by a high level of past negative and present fatalistic perspective (Mostowik and Cyranka Mostowik, 2018).

The ability to inhibit actions was also an important predictor of aggression. People who have a higher score on the stop control scale have a lower score on the aggression scale. SEM analysis also indicates that a high level of stop control significantly reduces aggression. This is in line with previous studies. The influence of the family on the education of start and stop control is also noted. It turns out that the individual in the process of socialization learns to inhibit aggressive impulses (Frączek, 2002).

10. Limitations

However, there are some limitations of the research. The research was performed on a specific sample of men not using psychoactive substances. The obtained results cannot be estimated for the wider population. In addition, the tests carried out on the Polish sample do not necessarily reflect general relationships. Satisfactory parameters could not be obtained in the SEM model, which indicates limited possibilities of cause and effect interpretation. Regression analysis, however, quite clearly explains at least 50% of significant predictors of aggression in men. It was not possible to explicitly confirm all the hypotheses regarding the influence of individual psychoactive substances. A better predictor is simply addiction as a general category. The study does not take into account the causes of aggression in women, which is worth investigating in similar studies.

11. Conclusions

Using small sample we showed that GAM model could be effective in building significant regression model that explains more than 50% of variance and use psychological variables. Moreover, results can provide the theoretical basis for prevention programs as part of intervention to help understand deeper phenomena of men's aggression. However, results should be replicated on a bigger sample with the measurement of different types of measured variables or SEM models that can support stronger direction of the relation of variables. In future, distinguishing between personality problems, drug addiction or willpower level, can contribute to the development and selection of an appropriate therapeutic program to counteract aggression for people with a specific profile.

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References

- Anderson C.A., Carnagey N.L., and Flagan, E.M. (2004) 'Violent Video Games: Specific Effects of Violent Content on Aggressive Thoughts and Behavior', *Advances in Experimental Social Psychology*, 36, 199–249.
- Aranowska E., Rytel J., and Szymańska A. (2015) *Kwestionariusz Agresji Bussa-Perry'ego: Trafność, rzetelność i normy*, Warszawa.
- Barlóg M. J. (2015) *Uzależnienie od Internetu i jego osobowościowe determinanty*, *Hygeia Public Health*, 50, 197–202.
- Bettencourt B.A. et al. (2006) 'Personality and Aggressive Behavior Under Provoking and Neutral Conditions: A Meta-Analytic Review', *Psychological Bulletin*, 132, 751–777.
- Boles, S. M., and Miotto, K. (2003) 'Substance and violence: A review of the literature', *Aggression and Violent Behavior*, 8, 155–174.
- Buczny J., and Międzybrodzka E. (2014) 'Samokontrola i jej rola w odżywianiu się', *Zeszyty Naukowe Akademii Morskiej w Gdyni*, 86, 29–42.
- Buss A.H. and Perry, M. (1992) 'The Aggression Questionnaire', *Journal of Personality and Social Psychology*, 63, 452–459.
- Buss A.H. (1961) *The psychology of aggression*. Hoboken, New York.
- Bushman, B.J. (1993) *Human Aggression While Under the Influence of Alcohol and Other Drugs: An Integrative Research Review*, Cambridge University Press, 148–151.

- Carver Ch. and Scheier M. (2003) 'Self-regulatory perspectives on personality, Handbook of Psychology', *Personality and social psychology*, 5, 185–208.
- Chermack S.T., Fuller B.E. and Blow F.C. (2000). 'Predictors of expressed partner and nonpartner violence among patients in substance abuse treatment', *Drug and Alcohol Dependence*, 1, 58, 43–54.
- Chmielowska-Marmucka A. (2019) *Korelaty osobowościowe a poziom i struktura agresji u adolescentów*, Nowy Sącz.
- Costa, P.T. and McCrae, R.R. (1992a) 'The five-factor model of personality and its relevance to personality disorders', *Journal of Personality Disorders*, 6, 343–359.
- Dahlen, E.R. and White, R.P. (2006) 'The Big Five factors, sensation seeking, and driving anger in the prediction of unsafe driving', *Personality and Individual Differences*, 41, 903–915.
- De Boer, B.J., Van Hooft, E.A.J. and Bakker, A.B. (2008) 'Stop and start control: A distinction within self-control', *European Journal of Personality*, 25, 349–362.
- Dewall, C.N., et al. (2007). 'Violence restrained: Effects of self-regulation and its depletion on aggression', *Journal of Experimental Social Psychology*, 43, 1, 62–76.
- Diener, E. (2000) 'Subjective well-being: The science of happiness and a proposal for a national index', *American Psychologist*, 55, 34–43.
- Fagan, J. (1993) 'Set and setting revisited: Influences of alcohol and illicit drugs on the social context of violent events', in S.E. Martin (ed.), *Alcohol and interpersonal violence: Fostering interdisciplinary research*, Washington, 161–192.
- Farnicka M., Liberska H. and Niewiedział D. (2016) *Psychologia agresji. Wybrane problemy*, Warszawa.
- Fernández-Montalvo, J., López-Goñi, J.J. and Arteaga, A. (2012) 'Violent behaviours in drug addiction: Differential profiles of drug-addicted patients with and without violence problems', *Journal of Interpersonal Violence*, 27, 142–157.
- Frączek A. (2002) 'Agresja interpersonalna: Opis i analiza z perspektywy psychologii społecznej', in Ł. Jurasz-Dudzik, *Człowiek i agresja. Głosy o nienawiści i przemocy. Ujęcie interdyscyplinarne*, Warszawa, 43–55.
- Garrity M.J. and Britt T.W. (2006) 'Attributions and personality as predictors of the road rage response', *Social Psychology*, 45, 127–147.
- Geen, R.G. (1975) 'The meaning of observed violence: Real vs. fictional violence and consequent effects on aggression and emotional arousal', *Journal of Research in Personality*, 9, 4, 270–281.
- Grochulska J. (1993) *Agresja u dzieci*, Warszawa.
- Hodgins D.C. and Engel A. (2002) 'Future time perspective in pathological gamblers', *Journal of Nervous and Mental Disease*, 190, 775–780.
- Kwitok, A. (2007) *Przemoc w rodzinie jako źródło zachowań agresywnych młodzieży*, Katowice.
- Lorenz K. (1969) *Tak zwane zło*, Warszawa.
- Łukaszewski W. (1983) *Osobowość, orientacja temporalna, ustosunkowanie do zmian*. Wrocław.
- Łukaszewski W. (1984) *Szanse rozwoju osobowości*, Warszawa.

- Marshall, B.D.L. et al. (2008) 'Physical violence among a prospective cohort of injection drug users: A gender-focused approach', *Drug and Alcohol Dependence*, 97, 237–246.
- Martin S.E. and Bryant, K. (2001) 'Gender differences in the association of alcohol intoxication and illicit drug abuse among persons arrested for violent and property offenses', *Journal of Substance Abuse*, 13, 4, 385–632.
- Mędraś M. and Józków P. (2009) 'Zastosowanie testosteronu i steroidów androgenno-anabolicznych w sporcie', *Polish Journal of Endocrinology*, 60, 3, 204–209.
- Młyński, J. (2012) 'Przemoc w rodzinie – skala zjawiska, ofiary przemocy i formy pomocy pracowników socjalnych', *Studia Socialia Cracoviensa*, 2, 4, 141–156.
- Muraven, M. and Baumeister, R.F. (2000) 'Self-regulation and depletion of limited resources: Does self-control resemble a muscle?', *Psychological Bulletin*, 126, 2, 247–259.
- Mostowik, J. and Cyranka K. (2018) 'Nowe trendy w psychoterapii. Znaczenie perspektywy czasowej w obszarze zdrowia psychicznego oraz podejmowanych interwencji terapeutycznych', *Psychoterapia*, 1, 184, 17–29.
- Paszowska-Rogacz A. (2015) 'Orientacja temporalna młodzieży a jej dojrzałość do planowania kariery', *Journal of Counselling*, 4, 85–105.
- Piasecka B. (2017) *Agresja – perspektywa psychoterapeutów*, Kraków.
- Pilch I. (2013) 'Sześcioczynnikowy model osobowości jako narzędzie analizy osobowościowych różnic pomiędzy grupami wyborców', *Political Preferences*, 5, 11–27.
- Poraj G. (2009) 'Osobowość jako predyktor zawodowego wypalania się nauczycieli', *Medycyna pracy*, 60, 4, 273–282.
- Rode D. (2010) *Psychologiczne uwarunkowania przemocy w rodzinie. Charakterystyka sprawców*, Katowice.
- Ridder D. de and Wit J. de (2006) 'Self-regulation in health behavior: Concepts, theories, and central issues', in de Ridder and J. de Wit, (eds.), *Self-regulation in health behavior* (1–23). Chichester.
- Schreiber J.B., Nora A. and Stage, F.K. (2006) 'Reporting Structural Equation Modeling and Confirmatory Factor Analysis Results: A Review', *The Journal of Educational Research*, 99, 323–338.
- Soper, D.S. (2020) *A-priori Sample Size Calculator for Hierarchical Multiple Regression* [Software]. Available from <https://www.danielsoper.com/statcalc>.
- Sorokowska, A. et al. (2014) *Polska adaptacja testu Ten Item Personality Inventory (TIPI) -TIPI-PL - wersja standardowa i internetowa*, Wrocław.
- Strelau, J. (2000) *Psychologia. Podręcznik Akademicki – Podstawy psychologii t. 1.*, Gdańsk.
- Tangney J.P., Baumeister R.F. and Boone A.L. (2004) 'High self-control predicts good adjustment, less pathology, better grades, and interpersonal success'. *Journal of Personality*, 72, 2, 271–324.
- Wojciszke B. (2012) *Psychologia społeczna*, Warszawa.
- Zawadzki B. et al. (1998) *Inwentarz osobowości NEO-FFI Costy i McCrae. Adaptacja polska*. Polskie Towarzystwo Psychologiczne, Warszawa.

- Zimbardo, P.G. and Boyd, J.N. (1999) 'Putting time in perspective: A valid, reliable individual-differences metric'. *Journal of Personality and Social Psychology*, 77, 6, 1271–1288.
- Zimbardo P.G. and Boyd J.N. (2009) *Paradoks czasu*, Warszawa.
- Znajmiecka-Sikorska M. and Sałagacka M. (2008) 'Podmiotowe wyznaczniki zachowań ryzykownych i agresywnych w grupie motocyklistów'. *Zeszyty Naukowe Politechniki Śląskiej*, 731–747.