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Reliability of the KK'017 questionnaire – test-retest military cadets

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A Study Design
B Data Collection
C Statistical Analysis
D Manuscript Preparation
E Funds Collection

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Abstract

Background and Study Aim: From the perspective of research methodology, simulation methods provide the greatest probability of predicting how a human will work in difficult and extreme situations. The main premise for the need to base the diagnosis of this category of activities on mixed assessments (praxeological and ethical) is the commonly perceived brutalization of interpersonal relationships. The purpose of the work is empirical verification of the reliability of the KK'017 questionnaire.

Material and Methods: The KK'017questionnaire includes 12 statements (or questions) informing about hypothetical situations with its participation. The result of each respondent's declaration is based on one of four mixed assessments (conventional points, which simplifies statistical analysis): 3 (most socially desirable); 2 (does not compromise the hypothetical maker in an ethical sense but indicates a lack of efficiency); 1 (testifies to the effectiveness but disgraces the maker); 0 (informs about extreme social maladjustment). The test-retest method was used 14 days apart. Twenty-two military cadets (male) of the second year of study were tested, age 22.97 ±1.63 years.

Results: The KK'017 questionnaire reliability confirmed the following highest correlations: r = 0.822 for "jump into the water to save a drowning person"; r = 0.795 for "a serious accident on the road when the respondent is in a hurry for an important meeting"; r = 0.766 for "the need to help others". Others from r = 0.761 to r = 0.556.

Conclusions: The test-retest results are empirical evidence that the KK'017 questionnaire meets the methodological criteria of the tool intended for simulation tests. Therefore, the recommendation of KK'017 for research on youth and adults is justified.

Key words: ethic • extreme situations • innovative agonology • mixed assessment • praxeology

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INTRODUCTION

From the perspective of research methodology, simulation methods (non-motor simulation [1], an example are projection tests [2-5]) as well motor and psychomotor (including phantoms used for example in the education of medical staff [6]) provide the greatest probability of predicting how a human will work in difficult and extreme situations [7, 8]. The main premise for the need to base the diagnosis of this category of activities on mixed assessments (praxeological and ethical) is the commonly perceived brutalization of interpersonal relationships. Brutalization is probably best visible in promotion of neogladiatorship through the mass media. This phenomenon is most often camouflaged using MMA *(mixed martial arts)* abbreviation; despite the justified protests from experts dealing with the emerging subdiscipline called science of martial arts, against using the term "athletes" when speaking about contemporary gladiators [9]. The lack of response from the parties whose mission is the declared concern about social order, friendship, peace and solidarity as far as the most important issues are concerned, to the appeal written in two congressional declarations dedicated to *Health and Martial Arts in Interdisciplinay Approach* (HMA 2015 Częstochowa and HMA 2018 Gdańsk) (see glossary), is a reliable determinant of their permissiveness.

Tadeusz Kotarbiński, the originator of modern praxeology is a forerunner of a mixed approach to human action assessment. In his paper, the first issue of *An Introduction to the Science of Efficient Action* (1955) is a reference source [10]. An important dimension of the modern ideas included in the *Introduction* is due to the fact that Kotarbiński published his fundamental work behind the Iron Curtain. At the same time, Kotarbiński was an originator of Independent Ethics [11]. His attitude towards praxeology was critical since as he suspected that under certain circumstances it might prove counterproductive (see glossary [12]).

He was both a self-proclaimed atheist and a humanist. He believed that the actions which are not only successful, but also adhere to universal criteria of humanistic values are most valuable. Therefore, he attributed the value of mixed assessment approach to the English term bravery (French: *la vaillance*, German: *Tapferkeit*, Polish: *waleczność*, Russian: *chrabrost*, Italian: *il valore militare*). Valor is therefore a specific form of bravery. A valiant person is also a brave person, but not always the other way round, which means that a brave person is not necessarily valiant [13].

Kotarbiński, defining "bravery" in a simple way in Polish, uses at the same time an expressive wordplay: "a brave person is a person who effectively plays fair" [10]. This simple definition reflects two important issues: 1) helping people at risk from elements and in any other way, especially protecting them against villains, is worthy of man and 2) helping should be effective.

Empirical studies on bravery (using simulation approaches such as multidimensional tests) were first conducted by Roman Maciej Kalina [14]. However, Kalina, being an expert in martial arts and a propagator (together with Jan Harasymowicz) of honourable self-defence [15] conception, he emphasized a specific aspect of human bravery, namely "courage". The outcome of his individual empirical studies [14] as well as the results of his PhD students' pedagogical experiments corresponding to the effect of aggressiveness and anxiety level reduction, and the development of bravery (courage), using methods that are mainly based on martial art training and original fun forms of martial arts [16-19], have led to the development of a unique approach to prophylaxis and treatment.

Kalina called this approach (being, in fact, a complex method) a cognitive behavioural prophylactic and therapy agonology [20, 21]. The goal (mission) of this method (or system in a broader context) is a continuous multidimensional health concern (comprising somatic, mental and social dimensions) and maintaining an optimal ability of a human being to survive, from micro- to macroscale). It seems logical as the probability to survive as a human race without being degenerated is directly proportional to the number of individuals efficiently living their lives and respecting universal value criteria. We believe that his way we can describe the mission of innovative agonology whose fundamentals were presented by Kalina in 1991 [13].

The main tools used to diagnose all dimensions of positive (somatic, mental and social) health and the cognitive effect of cognitive-behavioural prophylaxis and treatment are motor simulations (including numerous simulations with apparent prevalence of the behavioural factor and simulations referring to cognitive (intellectual) aspects.

Simulation – caused in model an event, which under some circumstances is similar to the event occurring in examined real object [12].

Praxiology – science about good work. ***A Treatise on Good Work***, a fundamental lecture of praxiology by Tadeusz Kotarbiński (the first edition in 1955) has been translated into majority of the so-called congress languages (English, German, Russian) and as well: Czech, Japanese, and Serbo-Croatian.

Częstochowa declaration 2015: HMA against MMA – "continuous improvement of health through martial arts as one of the most attractive form of physical activity for a human, accessible during entire life should constantly exist in public space, especially in electronic media, to balance permanent degradation of mental and social health by enhancing the promotion of mixed martial arts – contemporary, bloody gladiatorship, significant tool of education to aggression in a macro scale".

Gdansk 2nd HMA World Congress Resolution – Article 1 The white flag with five interlocking "Olympic rings" is the most recognizable symbol in the global public space. Neither did the resurrected idea of Olympia, "Citius, Altius, Fortius" save humanity from the horrors of two world wars, nor did the declared mission of the International Olympic Committee (IOC): "1. (...) the promotion of ethics and (...) ensuring that, in sport, the spirit of fair play prevails and violence is banned" (Olympic Charter, p. 18) stop the pathology of permanently educating contemporary man in aggression. **Article 2** Likewise, symbols (a sword pointed downwards surrounded by five rings) and motto ("Friendship through Sport") of Conseil International du Sport Militaire (CISM) did not stop soldiers from killing each other and murdering people after 1948 (the year of establishing CISM, the second largest multi-sport discipline organization after the IOC, and also the year of the Universal Declaration of Human Rights). **Article 3** Although there are five identical combat sports in the Olympic Games and the Military World Games, their potential is still not used to meet the second of the Fundamental Principles of Olympism: "(...) to place

The first simulations aimed at psychomotor competence evaluation, such as hand-to-hand fighting were developed by Kalina for Polish Armed Forces as early as in 1974. Since 1993, the group of co-authors of the tests (most often researchers highly involved in validation procedure) include mainly, but not only, Kalina's PhD students (names in bold) written in an alphabetical order: Bartłomiej Jan Barczyński [9, 22-26], Robert Bąk [27, 28], Dariusz Boguszewski [29, 30], Danuta Bukowiecka [31], Mirosław Carzyński (BA student) [32], Andrzej Chodała [17, 33], Dawid Dobosz [26], Bartłomiwj Gąsienica Walczak [34, 35], Jan Harasymowicz [15], Władysław Jagiełło [19, 22, 33], Artur Kalina [26, 34] Ryszard Kałużny [3, 7, 8], Jarosław Klimczak [8, 19, 24], Leon Krzemieniecki [36], Marian Kumala [37], Artur Litwiniuk [22], Dariusz Mosler (MSc student) [38], Michał Oleksy [39], Włodzimierz Reczko [40], Renata Syska [10, 16, 18], Jan Supiński [3, 41], Andrzej Tomczak [42], Zbigniew Wójcicki MSc student) [22], Leszek Ząbek [43].

Some of these multidimensional tests are modified [44] and the modifications are mainly based on conclusions from research and social needs (the response to progressing brutalization of interpersonal relations). Among other things, the comparative analysis of bravery in a sample of Polish police officers assessed using KK'98 questionnaire (developed by Kalina and Kałużny) carried out by Kałużny [45] in 1998, including assessment of this feature in Polish policemen by Kałużny and Płaczek [46] in 2010, prompted the authors to modify and develop the version called the KK'017 questionnaire. Decomposition of the five-grade scale (0-4) to develop a four-grade scale based on mixed ratings (praxeological and ethical [25] – see section methods) is the essence of modification.

The purpose of the work is empirical verification of the reliability of the KK'017 questionnaire.

MATERIAL AND METHODS

The KK'017 questionnaire includes 12 statements (or questions) informing about hypothetical situations with its participation.

The applied research tool is a modification of the KK'98 questionnaire [45]. The questionnaire includes 12 statements (or questions) informing about hypothetical situations with its participation: six of them about aggression is directed to the respondent, a person close to the respondent, a person unknown to the respondent (at one time the aggression is aimed at depriving the victim of life, at another – a goal of physical aggression is not specified); jump into the water to save somebody drowning (diagnosing bravery); the need to help others; a serious accident on the road when the respondent is in a hurry for an important meeting; the respondent's conduct in a sporting combat; the respondent's preferred way to resolve a conflict with the intention of achieving a relatively long-lasting effect; the way the respondent presents people the facts in various life situations.

Each of the 12 simulated circumstances (situations) is complemented by four alternative actions, from which the respondent selects only one (accurately illustrating his/ her actions in the described situations or is the closest to the action the respondent would be willing to take).

The result of each respondent's declaration is based on one of four mixed assessments (conventional points, which simplifies statistical analysis): 3 (most socially desirable); 2 (does not compromise the hypothetical maker in an ethical sense but indicates a lack of efficiency); 1 (testifies to the effectiveness but disgraces the maker); 0 (informs about extreme social maladjustment).

Participants

The test-retest method was used 14 days apart. Twenty-two military cadets (male) of the second year of study were tested, age 22.97 ±1.63 years.

Statistical analysis

The estimation of empirical variables (arithmetic mean, sample standard deviation, etc.) and hypothesis testing (significance test – independent correlation coefficients). Correlation coefficient between pairs of specified variables (test re-test).

RESULTS

Among the indicators concerning the declared actions of the respondent in various simulated threats of physical aggression, the highest correlation is the test and re-test results (r = 0.790) of the simulated circumstances when the attack on the respondent is not specified (Table 1). The

sport at the service of the harmonious development of humankind, with a view to promoting a peaceful society concerned with the preservation of human dignity" (Olympic Charter, p. 13). **Article 4** Boxing and wrestling cultivate the traditions of ancient Olympism. Judo and taekwondo have given martial arts humanistic and health attractiveness. Fencing combines this tradition with modernity in the spirit of chivalry. Aiming dynamic offensive and defensive actions directly at the opponent's body (irrespective of the protectors used) in such a way as not to hurt is a measure of respecting those knightly rules. This rule harmonizes with the principle of respect for the opponent's as well as one's own corporeality and dignity over the vain victory at all costs. **Article 5** For the civilized individual and the society for whom human health and dignity are the common good, participation, in any role, in brutal shows of people massacring each other cannot be a standard of the quality of life. Neogladiatorship camouflaged under the banner of martial arts or combat sports is a slight to the Fundamental Principles of Olympism, but also to the Universal Declaration of Human Rights. Therefore, this Resolution should inspire as many actors of Knowledge Society as possible jointly to oppose any deformations of the mission of Olympism and sport. The expansion of the pathology of unauthorized naming neo gladiators as combat sports athletes will soon turn the Fundamental Principles of Olympism into their own caricature – objective indicators are a testament to the devastation of all dimensions of health by the practice of legal bloody pageants [61].

Counterproductive – from praxeological perspective certain action can be: productive – non-productive – counterproductive – neutral. The action is **counterproductive** when a doer achieved goal opposite than intended [12, p. 220]

Table 1. Estimation of indicators (test and re-test) of the respondent's declared activity in two simulated situations of physical aggression directed at him.

Statistic indictor	Simulated situations described			
	the purpose of physical aggression is not clear		the purpose of aggression is to kill the respondent	
	Test	re-test	Test	re-test
X	**2.318**	**2.455**	**2.227**	**2.182**
SD	1.04	0.86	1.07	1.01
Min	0	1	0	1
Max	3	3	3	3
R	**0.790**		**0.625**	

Table 2. Estimation of indicators (test and re-test) of the respondent's declared activity in two simulated situations of physical aggression directed at the person close to the respondent.

Statistic indictor	Simulated situations described			
	the purpose of physical aggression is not clear		the purpose of aggression is to kill at the person	
	test	re-test	Test	re-test
X	**1.182**	**1.409**	**2.182**	**2.091**
SD	0.59	0.80	1.01	1.02
Min	1	1	1	1
Max	3	3	3	3
R	**0.647**		**0.726**	

Table 3. Estimation of indicators (test and re-test) of the respondent's declared activity in two simulated situations of physical aggression.

Statistic indictor	Simulated situations described			
	the purpose of physical aggression is not clear		the purpose of aggression is to kill at the person	
	Test	re-test	Test	re-test
X	**1.773**	**1.864**	**2.545**	**2.636**
SD	1.81	0.83	0.74	0.73
Min	1	0	1	1
Max	3	3	3	3
R	**0.556**		**0.565**	

correlation between the test and re-test results is slightly lower (r = 0.726) when the goal of a simulated description of an attack on a person close to the respondent is to kill him (Table 2). The lowest correlations (r = 0.556 and 0.565) concern activities in the simulated description of physical aggression directed at a person unknown to the respondent (Table 3).

The KK'017 questionnaire reliability confirmed the following highest correlations: r = 0.822 for "jump into the water to save a drowning person";

Table 4. Estimation of indicators (test and re-test) of the respondent's declared activity in three simulated situations.

Statistic indictor	Simulated situations described					
	jump into the water to save somebody drowning		the need to help others		a serious accident on the road when the respondent is in a hurry for an important meeting	
	Test	re-test	Test	re-test	test	re-test
X	**2.818**	**2.682**	**2.864**	**2.682**	**2.591**	**2.636**
SD	0.39	0.65	0.35	0.72	0.59	0.58
min	2	1	2	0	1	1
max	3	3	3	3	3	3
r	**0.882**		**0.766**		**0.795**	

Table 5. Estimation of indicators (test and re-test) of the respondent's declared activity in three simulated situations.

Statistic indictor	Simulated situations described					
	the respondent's conduct in a sporting combat		the respondent's preferred way to resolve a conflict with the intention of achieving a relatively long-lasting effect		the way the respondent presents people the facts in various life situations	
	test	re-test	Test	re-test	test	re-test
X	**2.136**	**2.273**	**2.455**	**2.409**	**2.00**	**2.091**
SD	0.64	0.70	0.80	0.85	0.53	0.53
min	2	1	1	1	1	1
max	3	3	3	3	3	3
r	**0.761**		**0.760**		**0.677**	

r = 0.795 for "a serious accident on the road when the respondent is in a hurry for an important meeting"; r = 0.766 for "the need to help others" (Table 4). Others from r = 0.761 to r = 0.677 (Table 5).

DISCUSSION

The main limitation of the study conducted in a sample of 22 military (male) cadets, second year students (aged 22.97 ±1.63 years), was too small a sample size. Conversely, the unique material was the advantage of the research. Cadets are educated for taking part in a very important social mission involving defence against aggression from external enemies. Due to Poland's membership in the United Nations Organization (aside from NATO), Polish military troops participate in peace missions in different parts of the world. Therefore, they often have to face extreme circumstances and the yearly numbers of victims, injured militaries and veterans who will remain disabled till the end of their lives, are risk scale indicators.

Two years of studies at the military university is a sufficient period of time for cumulation of training effects obtained before starting studying, with specific contribution of the teachers and commanders who train future officers in unique defensive task performance in their country and in the countries participating in peace (stabilizing missions) [47]. The result of our research, regardless its methodological purpose (related to validation of the KK'017 questionnaire) provides us with the knowledge on the level of bravery among young males during their training stage, aimed at acting in accordance with social expectances, under difficult and extreme conditions. Presently and in the future, it is rather impossible to determine how many of these (future) candidates for military officers will choose this direction by vocation. In other professions (e.g. musicians, artists, priests and health service staff or probably several other), such prognosis is definitely possible.

The test-retest results confirm that KK'017 questionnaire meets the criteria of a diagnostic tool

assessing man's declared actions under difficult and extreme conditions from two perspectives, namely the effectiveness and compliance with the norms of human (humanistic) ethics. Moreover, the questionnaire composed of 7 theses and applied by Kalina in his pioneer study on self-defence instinct in military cadets (n = 78) was the prototype of KK'98 questionnaire (in terms of methodological criteria) while bravery was evaluated with the KS-4M projection test) [14]. In reality, self-defence instinct is a component of widely understood bravery. The reliability index (measured after a week using "test-retest" approach "obtained from this questionnaire based on 7 theses") was 0.68 with the distribution ranging from 0.52 to 0.82. The results of our validation are similar.

Therefore, if we assume that KK'017 questionnaire (without excluding possible modifications) can be applied in studies conducted in various social groups and the results of our study presented in this paper may serve as a specific source of reference. They can be compared both with the results obtained in younger populations (especially high school pupils), students studying different subjects in different fields as well as the representatives of various professions with different scales of potential extreme risk and with different work experience (years of service). We should expect that the factors related to experience and specific educational effects (e.g. educating physicians or paramedics) are revealed during studies using KK'017 questionnaire or during simulations based on identical or similar theses.

Easy decomposition of results is the next advantage of KK'98 questionnaire. Although numerous study results obtained from KK'98 questionnaire [17, 45, 48-56] are published, the question whether the authors would conduct a secondary analysis of the empirical data and whether such decomposition is justified, either for cognitive or application reasons, is open to discussion.

This perspective is interesting, both from a cognitive and applicative point of view since the developing method (system), namely cognitive behavioural prophylactic and therapy agonology [20, 21, 57, 58], is extended to include the sphere of intellectual and emotional impact. The papers recommended as martial arts bibliotherapy have already been published [59, 60]. We cannot exclude that in not too distant future art therapy methods and means will be implemented, especially those combined with martial arts training. KK'017 questionnaire will make it possible to measure training effects according to praxeological and ethical criteria, which is in conformity with basic theses and the mission of innovative agonology.

CONCLUSIONS

The test-retest results are empirical evidence that the KK'017 questionnaire meets the methodological criteria of the tool intended for simulation tests. Therefore, the recommendation of KK'017 for research on youth and adults is justified.

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