

Psychometric Properties of the Serbian Version of Mental Toughness Inventory and Dark Triad Dirty Dozen in Police Students

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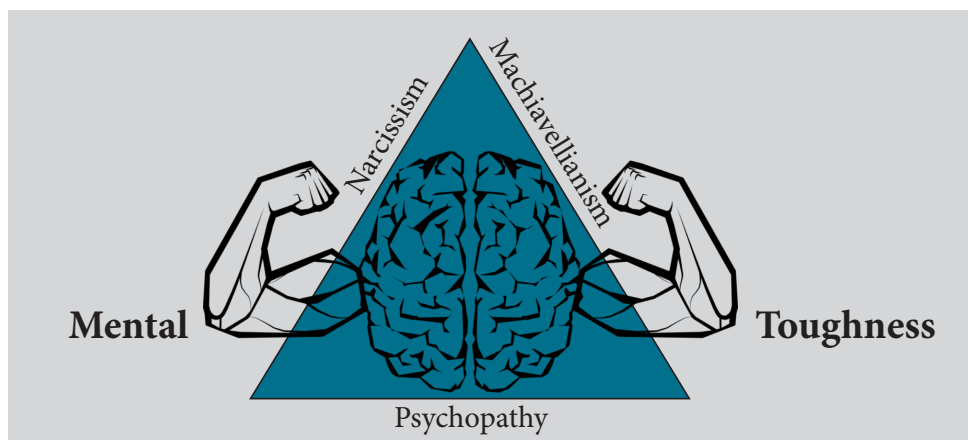
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Abstract: Police work is a stressful occupation, where officers are exposed to chronic and intense stressors. When it comes to understanding and predicting reaction to prolonged stress, it has been shown that there is more to personality than what can be captured by the most widespread personality models. Adding Mental Toughness as the capacity to tolerate and overcome stress at work, as well as the Dark Triad as a tendency for malevolent behaviour, to the traditional model of assessing the personality of a police officer can improve the prediction of important outcomes. The aim of this paper was to examine the psychometric properties of the Serbian translations for the Mental Toughness Inventory (MTI) and the Dark Triad Dirty Dozen (DTDD) in a population of police students. The research was conducted on a sample of 92 students in their first and second years at the University of Criminal Investigation and Police Studies. Considering the specificity of the sample, both instruments showed good reliability (Cronbach's Alpha Based on Standardized Item $\alpha = 0.81$ for MTI and $\alpha = 0.84$ for DTDD); factor structure was confirmed for the MTI ($\chi^2 = 51.5$, $p < 0.001$, CFI = 0.864) and DTDD ($\chi^2 = 105$, $p < 0.001$, CFI = 0.886) as well as convergent ($r = -.384$, $p < 0.01$ between Mental toughness, and Machiavellianism). Although deviations from the normal distribution were obtained, having in mind the rigor of psychological and physical selection into the Police University, the obtained psychometric properties of the MTI and DTDD were acceptable and we recommend the instruments for further usage.

Keywords: mental toughness, Narcissism, Machiavellianism, psychopathy, validation, police.

Graphical abstract



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INTRODUCTION

Police work can be very stressful on different occasions. Whether it is an everyday task or a serious crime investigation, different forms of psychological burdens appear. When found in such situations, a tendency to develop maladaptive behaviours may occur. The development of such behaviours can lead to excessive use of force, a tendency toward corruption, or other undesirable behaviours (Kesic, 2017; Kesić, 2018).

As a basic pillar of security of any society, police officers serve as role models, therefore developing an extensive and rigorous system for selection, physical training, and regular monitoring of health status is imperative (Milosevic & Milosevic, 2014). Improving the selection process for police cadets and potential police officers is probably the most efficient way to avoid a greater likelihood of developing maladaptive and undesirable behaviours. Having this in mind, the main goal is to select the best of the best, those who are able to handle heavy pressure, control their emotions in stressful situations and avoid any unnecessary use of force. Police schools and academies use entrance exams as a way to collect as much information about the candidates as possible. This refers to psychological assessment, such as behaviours in certain situations, states, and traits that give great insight into a person's character (Kostić et al., 1997; Milosevic & Milosevic, 2014; Milovanović et al., 1996; Tarescavage et al., 2015).

It is necessary to say that person's character cannot be analysed thoroughly with precision, although certain questionnaires can give a very reasonable level of assessment. When it comes to law enforcement, there are numerous questionnaires that have already been used for different types of personality assessment (Janković et al., 2019; Kukić et al., 2021). When assessing the stress that police officers experience on a basic level, certain information about their personality traits (in the widest context of individual differences) as well as the current state is also assessed. This information provides valuable guidelines for further development of the assessment program, and with such information, the agency can take different actions to increase officers' satisfaction or address any possible maladaptive or malevolent behaviour (Kukić et al., 2021). On the other hand, psychology as an important science included in police research can be used to try to develop new ways of collecting information about police officers' behaviours. With this in mind, the phenomena of mental toughness and the dark triad could contribute to further understanding of police officers' personalities.

Mental Toughness (MT) represents a personality trait that determines how people respond to different challenges, stress, and pressure (Clough & Strycharczyk, 2012), and are able to keep on achieving desired results according to their maximum capabilities, regardless of the situation in which they find themselves (Clough et al., 2002). That is why having highly developed MT recommends a candidate for future police work rather than a candidate with a weaker MT. In specific entrance exam situations, where candidates are often equated in a number of characteristics, this may be the most desired information about the candidate's personality which could be a difference-maker in the selection process. On the other hand, the Dark Triad (DT), which consists of negative personality traits like Narcissism, Machiavellianism, and Psychopathy presents a tendency for the lack of empathy, manipulation, exploitation, unemotional callousness, selfishness, etc.



(Paulhus & Williams, 2002). The DT covers a number of traits in common that overlap with each other, so they should be also investigated as a whole (Gordon & Platek, 2009; Paulhus, 2014).

We have to bear in mind the conclusions of empirical studies that there is more to personality than what can be captured by the most widespread personality models such as BIG 5. This model asserts individual differences in behaviour, classified in five independent dimensions – Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness (Furnham et al., 2009) and broadening the domain of personality assessment with the MT and DT can improve the prediction of important outcomes (Papa-georgiou et al., 2019a). This is important especially when it comes to understanding and anticipating reactions to prolonged stress. In this way, we can predict how much stress the future candidate can endure, what his work performance will be like in stressful conditions, and whether he will be inclined to resort to illicit means and behaviours under the conditions of a difficult work situation. Assessing MT and the DT can be important new tools in the selection process as well as for use in stress-related harm prevention (Ilic et al., 2020). The Mental Toughness Inventory (MTI) and the Dark Triad Dirty Dozen (DTDD) are commonly used instruments for this purpose (Cowden, 2016; Dinić et al., 2018; Gucciardi et al., 2015; Jonason & Webster, 2010).

As mentioned earlier, police students and cadets must pass different types of training, evaluation, and assessment before joining police enforcement and becoming qualified for official police work. As the University of Criminal Investigation and Police Studies (UCIPS) in Serbia recruits, educates, and prepares students to be future police officers and investigators, it is very important to have a deeper insight into their personalities, which could help to avoid inadequate selection as well as to avoid the development of undesirable behaviours in response to prolonged stress. The MTI to our best knowledge did not have a Serbian version. On the other hand, although the DTDD has a validated Serbian version, the population of the UCIPS students is strictly selected and in a lot of ways different from the general population (Kucic et al., 2020; Tomes et al., 2020). While the general population, for which the instruments were originally intended and on which they were weighted, represents the whole repertoire of normally distributed possible expressions of personality traits and behaviours, the UCIPS students have been selected so that, at least in theory, only a narrow and desirable domain of manifestation of the mentioned characteristics is possible. It is hard to imagine that the candidates chosen for the Police University are characterized by poorly developed MT or high Narcissism, Machiavellianism, and Psychopathy, while this is not uncommon in the general population purpose (Cowden, 2016; Dinić et al., 2018; Gucciardi et al., 2015; Jonason & Webster, 2010). Thus, it is important to undergo an additional validation process to examine whether the MTI and DTDD are suitable for usage in such a specific context.

The aim of this paper was to examine the psychometric properties of the Serbian translations for the MTI and DTDD in a population of UCIPS students. The results of this research could have implications for the selection system of police students and future police officers.



METHODS

Participants and Procedures

The research was conducted on a suitable UCIPS student sample. The criteria for participation were primarily voluntary registration of respondents and the condition that they are the first- or second-year students. In this way, the research did not disrupt regular work and studying, while the choice of lower grades was made to make the study as similar as possible to the conditions of the real entrance exam according to the developmental and psychological characteristics of the respondents. Formed in this way, the sample of this research included 92 students of first and second year in the UCIPS (Age = 19.7 ± 0.8 years, Body height (BH) = 177.1 ± 7.7 cm, Bodyweight (BW) = 72.6 ± 11 kg) among whom, 47 were male (Age = 19.9 ± 0.7 years, BH = 182 ± 4.8 cm, BW = 80.4 ± 8.11 kg) and 45 were female (Age = 19.5 ± 0.8 years, BH = 172 ± 6 cm, BM = 64 ± 6.5 kg). The students of the UCIPS are a strictly selected population - physically and mentally healthy, and ready individuals who are in the process of undergoing education and training for police work as future executives, commanders, and officers. The sample size was determined after applying a power analysis. For one-tailed t-tests - Correlation: Point biserial model, with $\alpha = 0.05$, power $1 - \beta = 0.80$, and medium effect size ($\rho = 0.30$), the sample size should comprise at least 64 participants (Faul et al., 2007). Considering the sample size and its representativeness, one should bear in mind that our sample represents roughly a half of the UCIPS population. Although a larger sample would give better metric characteristics, especially reliability, given the primarily applied nature of the objectives of this paper, such a thing would not be justified. All participants were informed about the study aims and procedures and provided written informed consent for their voluntary participation. The study was conducted in accordance with the European Commission's General Data Protection Regulation (GDPR), and the American Psychological Association-prescribed Ethical Principles and Code of Conduct. The study design was approved by the Ethical Board (number 484-2) of the Faculty of Sport and Physical Education, University of Belgrade.

Mental Toughness Inventory

The correlation design was used to examine the psychometric properties of the Serbian Version of the MTI and DTDD in a population of the UCIPS students. The MTI, which provides a reliable one-dimensional assessment of MT (Gucciardi et al., 2015) consists of eight items, and the participants express the level of agreement with the statements by seven-point Likert-type assessment scales. The average participant's score across all eight items varies from a minimum of 1 (poorly developed) to a maximum of 7 (extremely developed). The MTI has good psychometric characteristics which are empirically confirmed (Gucciardi et al., 2015), and has been widely used in psychological assessment (Cowden, 2016; Gucciardi et al., 2016). The items of these questionnaires were translated to native Serbian first by a professor of English language and a professional translator, after which they went through a proofreading process by a professor of Serbian language and grammar. Afterwards, they were reviewed by police experts to evaluate if the items were put into the right context for the Serbian police officers in order to avoid any difficulties understanding them. It was ensured that the questionnaires were adjusted to the Serbian police organization and culture. The final version of the MTI can be found in Appendix 1.



Dark Triad Dirty Dozen

The DTDD provides a reliable three-dimensional assessment of DT traits through three socially malevolent traits: Machiavellianism (Mch), Psychopathy (Psp), and Narcissism (Nrc) (Dinić et al., 2018; Jonason & Webster, 2010). The DTDD consists of 12 items, four for each dimension, that is answered using seven-point Likert-type assessment scales. Similar to the MTI the average of a participant's scores on subscales vary from a minimum of 1 (poorly present) to a maximum of 7 (extremely present). The DTDD has been widely used in scientific research and clinical practice (Jonason & Davis, 2018; Sabouri et al., 2016), due to its good psychometric characteristics (Dinić et al., 2018; Jonason & Webster, 2010). DTDD has been used previously in Serbia on the general population (Dinić et al., 2020), students (Dinić et al., 2018), as well as some specific populations such as football fans (Međedović & Kovačević, 2021).

The research was conducted in two groups, the first- and second-year students, in the UCIPS amphitheatre. Each participant was asked to fill in the paper questionnaire that consisted of items related to their socio-demographic status, the MTI and DTDD psychological questionnaires. The order in which the psychological questionnaires were given was randomized and there was no time limitation.

Statistical Analyses

Data collection was performed in two sessions. After data collection, in order to perform further analyses, the data were coded and transformed into a numerical matrix. The data from the first part of the questionnaire were transformed into a nominal and ordinal scale according to the participant's answers and their frequency, while the answers to the statements from the MTI and DTDD were converted into total scores by averaging the items for total and subscales for each participant. Basic anthropometric measures, with the written consent of the subjects, were taken from student records and added to the matrix.

Prior to the main analyses, missing values were identified. The middle values of scale were assigned instead of missing values if no more than 5% of data are randomly missing. This procedure is justified by the results of empirical studies (Tabachnick et al., 2007). No questionnaire has even neared the 5% of missing values, and no one had multiple values chosen so all 92 questionnaires were usable.

First, the data were subjected to descriptive statistical analysis. The Shapiro-Wilk test was used to determine the normality of the data distribution. Reliability analysis was used to determine the reliability of the instruments used and the changes in reliability if each item was dropped. The expected factor structures were tested with confirmatory factor analysis. Construct and convergent validity were tested with Pearson's correlation analyses. For the purpose of discriminant validity assessments, descriptive statistics, skewness, and kurtosis as well as nonparametric Shapiro-Wilk test were used.

Statistical significance was defined at the level of 95% probability, for the value of $p < 0.05$ and at the level of 99% probability, for the value of $p < 0.01$. All statistical analyses were performed using SPSS 20 (IBM Corp., Armonk, N.Y., USA) and Jamovi (version 1.2.27.0).



RESULTS

Descriptive statistical analysis was performed on the whole sample for the scores (Table 1) as well as for the items (Table 2) of the MTI and DTDD. The analysis shows that the sample was quite homogeneous on the MT and heterogeneous on all DTDD variables. The analysis at the level of the item (Table 2) showed similar results. Scores cover only a part of the scale that represented the desired values, which was the result of the selection of candidates. Shapiro-Wilk test showed significant deviations from the normal distribution of all scores. Considering the described strictness of the subject's population, this deviation is expected and acceptable. Since the instruments are intended for the general population, whose scores should be distributed in the normal distribution along with the entire length of the measuring scales, when applied to our population in some scales they simply were not sufficiently low (Mch, Psp) or high enough (MT) manifestation that could describe the exact way of difference between the participants, which is manifested by increased Skewness. This can also be seen by shifting the arithmetic mean to more extreme values. Also, the previous selection of candidates is manifested in a large number of similar entities, which leads to the accumulation of scores around the mean and an increase in Kurtosis. According to all analysed data, the Nrc is quite close to the normal distribution and if the identification of the outliers was done, the deviation from the normal distribution would probably no longer be statistically significant.

Table 1. *Descriptive and Reliability Statistics for the MTI and DTDD Scores*

Descriptives	MT	Mch	Psp	Nrc
Mean	6.30	1.60	2.10	3.07
Std. Error Mean	0.06	0.10	0.12	0.15
Standard Deviation	0.60	0.97	1.10	1.48
Median	6.38	1.00	2.00	3.00
Minimum	3.75	1.00	1.00	1.00
Maximum	7.13	5.25	5.25	6.25
Skewness	-1.10	1.98	0.82	0.35
Std. Error Skewness	0.25	0.25	0.25	0.25
Kurtosis	2.21	3.58	-0.15	-0.80
Std. Error Kurtosis	0.49	0.49	0.49	0.49
Shapiro-Wilk W	0.91	0.68	0.88	0.94
Shapiro-Wilk p	<0.001	<0.001	<0.001	<0.001
Cronbach's α	0.78	0.86	0.60	0.78
Cronbach's Alpha Based on Standardized Items	0.81	0.88	0.59	0.76
Mean Inter-Item Correlation	0.35	0.65	0.27	0.44

Note: MT – Mental Toughness, Mch – Machiavellianism, Psp – Psychopathy, Nrs – Narcissism.

The reliability of both instruments (Table 1 and 2) was relatively high and acceptable, with Cronbach's α being good and acceptable except for Psp which is questionable. Although



exclusions of some items especially PSP4 and NRC4, would increase reliability to some extent, having in mind that both instruments have been validated several times and that both are in wide use, even in the full version they show acceptable reliability when applied to. For DTDD as a whole, Cronbach's $\alpha = 0.810$, and Cronbach's Alpha Based on Standardized Items = 0.840.

Table 2. *Descriptive and Reliability Statistics for the MTI and DTDD Items*

Variables	Mean	Standard Deviation	Item-Total Correlation	Cronbach's α if item dropped
MT1	6.55	0.72	0.61	0.74
MT2	6.38	0.86	0.62	0.73
MT3	5.57	1.43	0.32	0.80
MT4	6.75	0.57	0.41	0.77
MT5	6.66	0.58	0.34	0.77
MT6	6.08	1.08	0.68	0.71
MT7	6.51	0.69	0.63	0.74
MT8	5.93	1.34	0.54	0.75
Mch1	1.97	1.55	0.65	0.88
Mch2	1.42	1.00	0.76	0.80
Mch3	1.64	1.09	0.75	0.80
Mch4	1.38	0.89	0.78	0.80
Psp1	2.74	1.98	0.41	0.51
Psp2	1.78	1.50	0.33	0.57
Psp3	2.23	1.72	0.57	0.37
Psp4	1.64	1.23	0.25	0.61
Nrc1	2.83	2.08	0.72	0.65
Nrc2	3.22	1.98	0.79	0.61
Nrc3	4.53	2.21	0.60	0.72
Nrc4	1.71	1.20	0.27	0.85

Confirmatory factor analysis (Table 3 and 4) provided a significant factor model for the MTI ($\chi^2 = 51.5$, $p < 0.001$, CFI = 0.864, TLI = 0.809, SRMR = 0.067, RMSEA = 0.131, RMSEA 90% CI [0.087, 0.176]) and DTDD ($\chi^2 = 105$, $p < 0.001$, CFI = 0.886, TLI = 0.852, SRMR = 0.108, RMSEA = 0.107, RMSEA 90% CI [0.078, 0.136]). Although the obtained results do not meet traditional cutoffs used in empirical studies (SRMR ≤ 0.08 , RMSEA ≤ 0.06 , and CFI ≥ 0.96) (McNeish & Wolf, 2021), this is expected because of the small sample size and the small number of items in Confirmatory factor analysis models. The parameter estimates showed that all indices provided significant factor loadings for both instruments.



Table 3. *Confirmatory Factor Analysis Parameter Estimates for the MTI*

Indicator	Estimate	SE	95% Confidence Interval		Z	p
			Lower	Upper		
MT1	0.55	0.07	0.42	0.68	8.20	<0.001
MT2	0.63	0.08	0.47	0.79	7.77	<0.001
MT3	0.44	0.16	0.13	0.75	2.79	0.005
MT4	0.25	0.06	0.13	0.37	4.16	<0.001
MT5	0.24	0.06	0.12	0.37	3.91	<0.001
MT6	0.84	0.10	0.64	1.03	8.27	<0.001
MT7	0.48	0.07	0.35	0.61	7.29	<0.001
MT8	0.77	0.14	0.50	1.04	5.59	<0.001

Table 4. *Confirmatory Factor Analysis Parameter Estimates for the DTDD*

Factor	Indicator	Estimate	SE	95% Confidence Interval		Z	p
				Lower	Upper		
Mch	Mch1	1.11	0.15	0.83	1.40	7.65	<0.001
	Mch2	0.84	0.09	0.67	1.01	9.77	<0.001
	Mch3	0.90	0.10	0.71	1.08	9.44	<0.001
	Mch4	0.74	0.08	0.59	0.90	9.65	<0.001
Psp	Psp1	1.13	0.21	0.71	1.55	5.27	<0.001
	Psp2	0.64	0.17	0.29	0.98	3.66	<0.001
	Psp3	1.42	0.20	1.03	1.82	7.05	<0.001
	Psp4	0.38	0.15	0.10	0.67	2.61	0.009
Nrc	Nrc1	1.77	0.18	1.41	2.13	9.59	<0.001
	Nrc2	1.85	0.17	1.52	2.19	10.97	<0.001
	Nrc3	1.43	0.21	1.01	1.84	6.78	<0.001
	Nrc4	0.34	0.13	0.08	0.59	2.59	0.010

Pearson correlation analysis used for construct validity analysis showed a weak but significant negative correlation between MT and Mch ($r = -0.384$, $p < 0.01$), and medium positive correlation between Mch and Psp ($r = 0.521$, $p < 0.01$) and Mch and Nrc ($r = 0.450$, $p < 0.01$). Psp also showed a weak but significant positive correlation with Nrc ($r = 0.213$, $p < 0.05$). Very weak correlations between MT and Psp ($r = 0.004$) and Nrc ($r = -0.037$) as well as weak negative correlations between MT and total DTDD score ($r = -0.154$) but not statistically significant ($p > 0.05$) were also obtained.



DISCUSSION

This study aimed to examine the psychometric properties of the Serbian translations for the MTI and DTDD in the population of the UCIPS students. The main finding confirmed the construct validity for evaluation of MT and the DT among police students, making them usable as instruments for personality assessment. The results also showed there was a significant relationship between different personality traits, confirming the results of previous research (Dinić et al., 2018; Jonason & Webster, 2010). The direction of correlation, where MT scores are negatively related to DT scores, while DT scores are positively related to each other, is also expected, and in accordance with the results of previous studies (Dinić et al., 2018; Jonason & Webster, 2010; Papageorgiou et al., 2019a). According to descriptive indicators (Tables 1 and 2), the participants in the research represented an exceptionally physically and mentally healthy and developed population, with highly developed MT and weakly present DT. It should be noted that the body composition of police officers (BMI = 25.86 kg/m²; PBF = 23.59 %) (Kukic et al., 2018), compared to the general population (BMI = 25.63 kg/m²; PBF = 28.3 %) (Dopsaj et al., 2018, 2021), indicates that they have similar basic indicators about their morphological status, but it is clear that they have much better body structure with a lower level of body fat. This shows that police officers belong to the above-average physically prepared and healthy population, which is one of the important aspects of their selection. Similarities emerge when it comes to psychological indicators. The MT of the group can be described as extremely developed, even if compared to athletes (Zarić et al., 2021), where the members of our sample have a slightly more developed MT. On the other side, the DT is extremely weak (Mch and Psp) and weakly present (Nrc). This is especially true when compared to the results of the general population (Dinić et al., 2018; Jonason & Webster, 2010), where the results range from Mch = 2.61 ± 1.4 to Nrc = 3.60 ± 1.3 and where the total scores bigger than 3.75 were considered as very high. This limited range of manifestations of physical and psychological variables within our population had a negative impact on the obtained metric characteristics, which is best illustrated by the deviation of the obtained results from the normal distribution. Also, since this study has a clear applicative character, the obtained results were not subjected to the procedure of removal of the outliers, which should also be kept in mind when conclusions about metric characteristics are made.

It should also be noted that in previous validation studies (Dinić et al., 2018) some degree of violation of normality of scores distribution was also obtained, which speaks in favour of the acceptability of our results. Considering the described specifics of the population, as well as the specifics of the measuring instrument and personality traits that are assessed, the descriptive statistics results (Table 1 and 2) provide statistical support for the future usage of both instruments and their discriminative power in the population of the UCIPS students.

Reliability parameters (Tables 1 and 2) are in a small amount lower than in previous validation studies (Dinić et al., 2018; Gucciardi et al., 2015; Jonason & Webster, 2010), where Psp Cronbach's α did not fall below 0.66 but also did not rise above 0.77, while the minimum recorded values for other variables are at the level of those recorded in our study. Again, having in mind the characteristics of the sample, the instruments demonstrate an acceptable level of reliability in the population of the UCIPS students.



Confirmatory factor analysis (Tables 3 and 4) confirmed the same structure as expected from constructing the instruments, which provides the evidence for internal validity, as well as from the results of previous validation studies (Dinić et al., 2018; Gucciardi et al., 2015; Jonason & Davis, 2018) which is evidence of instrument's external validity. Although these are just indicators, a confirmation of internal validity requires experimental design, and confirmation of external validity requires a larger or longitudinal study. Therefore, the obtained results speak in favour of the conclusion that the MTI and DTDD were valid constructs when they are used in the population of UCIPS students.

The results of correlation analyses are also in line with the results of previous studies (Dinić et al., 2018; Jonason & Webster, 2010). This is especially true when it comes to the negative connection between MT and DT (Papageorgiou et al., 2019b; Zarić et al., 2021). Based on the results of the aforementioned studies one can expect stronger relations for the reasons already explained, but it can be said that the construct validity of both instruments in the UCIPS population was confirmed.

All obtained results indicate that the main aim of this paper, which is to examine the psychometric properties of the Serbian translations for the MTI and DTDD in a population of UCIPS students is fulfilled, and that the instruments have performed well, i.e. that they have at least acceptable characteristics, which is quite well in the practical conditions of conducting this study. Thus, we can recommend further usage of MTI and DTDD in the population of the UCIPS students. Using these questionnaires can further improve the selection process at the police university, but they may also be a reliable instrument in investigating possible maladaptive or malevolent behaviours by policemen. By this, it is meant that certain traits which are emphasized, such as Mch which could also indicate a presence of Psp, could show a propensity for undesirable behaviours like corruption or manipulation and exploitation of others in pursuit of higher goals. When working in police enforcement, acting in this manner even from the best intentions is unacceptable.

On the other hand, a negative MT correlation with Mch, which indicates a desirable trait by police officers can be a starting point for further investigation when it comes to stress management in everyday police work. Police officers that are highly focused on their primary objective would probably withstand a higher amount of pressure and stress without acting undesirably. Considering the situations around the world where mass protests are organized and police officers are engaged to maintain peace and order, it is very preferable to possess a strong MT in order to act within the limits of the law. In addition, withstanding a high amount of stress on a weekly or monthly basis could develop different psychological problems for police officers regarding excessive workload, social-life management, occupational fitness, etc. (Fayyad et al., 2020). Further research on this topic showed that policemen's alcohol usage was mainly associated with Posttraumatic Stress Disorder and subjective work-related traumatic distress (Chopko et al., 2013). As to the author's knowledge, stress was mainly assessed through the Operational (PSQ-Op) and Organizational (PSQ-Org) police stress questionnaires (Kukić et al., 2021; McCreary et al., 2017), so the findings of this study can be valuable in further research development on this topic.



LIMITATIONS

Although this study included more than a representative sample of the UCIPS students, the sample size was still insufficient for drawing clear conclusions with a high level of statistical certainty about the metric characteristics of the instruments. Therefore, to some extent, it remained unclear whether some of the observed instrument defects were due to insufficient sample size. Also, the small number of items in Confirmatory factor analysis models is a limitation of this study. In the end, a longitudinal study is necessary to determine the true value of using instruments in Police students.

CONCLUSIONS

Considering the obtained results, as well as the characteristics of the population surveyed, we can conclude that the primary goal of the study was achieved and that the obtained psychometric properties of the Serbian versions of the MTI and DTDD were sufficient to recommend the instruments for further usage in a population of the UCIPS students. However, the true predictive value of the instruments would be shown by a longitudinal study.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

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Appendix 1.

INSTRUCTIONS: Using the scale below, please indicate how true each of the following statements is an indication of how you typically think, feel, and behave as an athlete – *remember there are no right or wrong answers, so be as honest as possible.*

UPUTSTVO: Koristeći prikazanu skalu, naznačite koliko je tačna svaka od sledećih tvrdnji o tome kako tipično razmišljate, osećate se i ponašate – *zapamtite da nema tačnih ili netačnih odgovora, te budite što iskreniji.*

1	2	3	4	5	6	7
False, 100% of the time			True, 100% of the time			
Nikad, nimalo, 100% netačno			Uvek, stalno, 100% tačno			

English and Serbian version items of Mental Toughness Inventory.

1	I believe in my ability to achieve my goals Verujem u svoju sposobnost za ostvarenje sopstvenih ciljeva	1	2	3	4	5	6	7
2	I am able to regulate my focus when performing tasks U stanju sam da se usredsredim prilikom obavljanja zadataka	1	2	3	4	5	6	7
3	I am able to use my emotions to perform the way I want to U stanju sam da koristim svoje emocije da bih stvari radio na svoj način	1	2	3	4	5	6	7
4	I strive for continued success Težim ka kontinuiranom uspehu	1	2	3	4	5	6	7
5	I execute my knowledge of what is required to achieve my goals Koristim potrebna znanja za postizanje sopstvenih ciljeva	1	2	3	4	5	6	7
6	I consistently overcome adversity Dosledno prevazilazim poteškoće	1	2	3	4	5	6	7
7	I am able to execute appropriate skills or knowl- edge when challenged U stanju sam da primenim odgovarajuće veštine ili znanja kada naiđem na izazov	1	2	3	4	5	6	7
8	I can find a positive in most situations Mogu da nađem pozitivnu stranu u većini situacija	1	2	3	4	5	6	7

