Research Article

Psychometric of the Dark Personality (Dark Triad) Instrument in Iranian Students

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Abstract: This study aimed to assess the validity and reliability of the dark personality instrument in students of general physical education units of Mashhad universities. The participants include all students of Ferdowsi, Imam Reza, Islamic Azad, and Payame Noor universities who had chosen the units of general physical education and sport in the academic year of 2021-22, using the Morgan table, 196 people were randomly selected as a sample. A standard dark personality questionnaire (Jonason & Webster, 2010) was used to collect data. Cronbach's alpha test was used to confirm the reliability of the questionnaire. To confirm the instrument's validity, exploratory and confirmatory factor analyses were used. Data analysis showed that the factor load of all items is higher than the baseline value (0.4) and the research model has a significant fit. Also, the model fit indices had acceptable values. Finally, it is recommended to sports coaches and teachers of physical education classes and leisure time to use this scale at the beginning of each semester to get to know more about the personality characteristics of students in their class and to measure these people, this can help them a lot in how to manage their classes.

Keywords: Dark Triad; Narcissism; Psychometric; Students.

1. Introduction

One of the common topics in personality psychology is the identification of well-founded frameworks of human traits. Until today, several structures have been proposed to investigate these traits, each of which has proposed a unique and organized perspective in this regard [1]. In recent decades, attention to dark personality (dark triad) has increased in psychological studies. Dark personality theory consists of three related but different trait: Machiavellianism, narcissism, and psychopathy, all of which refer to exploitation, emotional coldness, hypocrisy, aggression, and feeling important [2]. In Machiavelli's personality type; multiple and pessimistic interpersonal relationships, self-centeredness, disregard for moral principles, the tendency to unethical behavior and violation of usual behavior, deception, and lack of feeling are the characteristics of these people. People with narcissistic personality types are characterized by arrogance, selfishness, exaggeration, aggressiveness, perfectionism, lack of empathy, and a feeling of superiority in intelligence, wealth, beauty, fame and finally, people with psychopathic personality types, which have antisocial behavior, lack of guilt and remorse, cruelty and hard-heartedness, lack of intimacy in interpersonal relationships, and the desire to take revenge are among the known characteristics of these people [3].

Despite the different origins of each of these three personality types, people with dark triad traits share some characteristics. All three personality types represent a malevolent social nature with behavioral tendencies towards self-aggrandizement, emotional coldness, duplicity, and aggressiveness to different degrees. Also, in many articles, the link between these three personality types has been mentioned and this trend is the basis for the evaluation of the experimental relationships of these three types in normal and non-clinical populations. As a result, there is a possibility that in non-clinical samples, the constitutive domains of the structure of the dark triad are equivalent and parallel [4].

In this regard, the main common factor among dark personality traits is a defect in the experience of emotion. Antisocial behaviors include two subcategories: Primary antisocial behaviors (including selfishness, callousness, lack of interpersonal affection, outward attractiveness, and cruelty) and secondary antisocial behaviors (including the lifestyle of antisocial behaviors). Research results have shown that people with high antisocial scores show a downward trend in their emotions [5]. Secondary antisocial behaviors are negatively related to mood improvement, and high scores in secondary antisocial behaviors lead to less confidence in mood regulation and improvement of negative emotions [6]. Researchers have stated these findings as evidence that antisocial behaviors may be the basis of emotional defects that cause insensitivity to emotional information. Individuals with high primary antisocial behavior reported more negative emotion after viewing the sad stimulus, while individuals with secondary antisocial behavior reported more negative emotion after viewing the neutral stimulus [7]. Machiavellianism is positively related to the experience of positive emotion caused by the stimuli inducing the experience of negative emotion. As with antisocial and Machiavellian traits, the association of narcissism with lower levels of empathy has led to the view that a person with narcissistic traits may be emotionally indifferent to others [8]. Also, the results showed that narcissism was positively related to less happiness and negative emotions [9] and it has also been found that there is a positive relationship between dark personality traits and students' academic progress [10]. Although people with Machiavellian personalities consider themselves to be intelligent people, research shows that the Machiavellian trait is related to mind reading and emotional intelligence instead of being related to general intelligence [11].

On the one hand the current pattern of the results of numerous types of research shows the relationship between dark personality traits and behavior, and the amount of dark personality traits that may predict greater success in the fields of economics, politics, or professional sports has been discussed and researched [12]. In this context, a 2012 study showed that people who receive professional sports training have higher mental toughness scores. Also, people who do specific sports exercises have higher mental toughness scores than those who don't do any sports, which indicate a positive relationship between sports exercises and mental health [13, 14]. On the other hand, mental toughness has negative indirect effects on the relationships between the triple factors of dark personality. In other words, narcissism increases the level of mental toughness and mental toughness decreases the level of Machiavellianism and psychopathy [15]. According to the above findings and the findings of Sabouri et al. (2016), it is clear that there is a deep relationship between physical activity, the triple factors of dark personality, and mental toughness. Therefore, the model resulting from these relationships considers mental toughness as a mediating factor in the relationship between physical activity and the triple factors of dark personality [16]. Also, research shows the relationship between this triple structure and recreational preferences. In the research conducted by Williams et al. (2001), it was found that psychopathy has a direct relationship with the choice of violent sports and a negative relationship with the choice of non-violent sports. Also, Machiavellianism has a negative relationship with the choice of non-violent sports, and narcissism has a direct relationship with the choice of violent sports [17].

In this regard, Annen et al. (2017) [18] investigated the relationship between the triple factors of dark personality and doping and concluded that athletes with a higher dark personality are more likely to use performance enhancers. Therefore, anti-doping training and monitoring can reduce the possibility of legal bans on them. Also, it will reduce the negative image of sports as a result of unfair competition [18]. Ueno et al. (2017)[15] concluded that the correlation between the triple factors of dark personality and athletes' gender, the type of sports event, and the level of competition, clearly indicate the importance of future research regarding this dimension of athletes' personality and the process of their sports performance and behavioral problems [15]. Although in some studies, the effect of Machiavellianism on the happiness of athletes and non-athletes was insignificant, it was positive and significant in non-violent sports, and the psychopathy factor had an inverse and significant effect on the happiness of athletes and non-athletes. Meanwhile the effect of happiness on the commitment, control, and struggle of athletes has been reported to be significant. The dark triad is one of the theories that have attracted a lot of attention from researchers. One can deal with the complications and symptoms of the dark triad when it is recognized and understood better. Therefore, psychologists and sports coaches should pay attention to these attributes of athletes [19]. Examining the relationship between dark personality traits has limitations; firstly, research has mainly focused on one of these three components [20]. Also, more dimensions of dark traits have been investigated in the clinical framework or criminal populations, such as prisoners and offenders with mental disorders. However, not all individuals with dark traits are in such groups. Therefore, the research literature has gradually emerged in the direction of examining dark traits in general and normal populations, which indicates that dark traits should also be researched in normal people [21]. Therefore, the current research is based on the normalization of the structure of dark personality in students of general physical education units.

Despite the growing scientific and research interest in the field of dark personality traits, there are fundamental methodological problems and weaknesses in the field of measuring and evaluating this concept. That is because the use of a separate questionnaire to measure each of the personality types, leads to answering many questions that reduce the necessary efficiency to evaluate the dark traits of the person; therefore, Jonason and Webster (2010)[19] developed a 12-item version to assess dark personality traits [19]. Also, despite the many efforts that have been made [4], the specialization of this structure is still in an aura of ambiguity, so it seems that recognizing the domains and infrastructures of the three-dimensional structure of the dark personality has become an important task for sports experts; because not having a precise and specific definition has caused problems and we cannot have high expectations from trainers, officials, and researchers in planning properly in this regard.

Although not much time has passed since the introduction of this instrument in 2010, research has been done on it in different cultures [9-19]. For example, Jonason and Webster (2010)[19] have obtained its internal consistency coefficients in two separate studied samples for the narcissism component of 0.85 and 0.87 and Machiavellianism 0.67 and 0.72 and for psychopathy 0.62 and 0.66. In terms of simultaneous and convergent validity of the components, the correlations ranged from 0.34 to 0.76 [21, 22]. In addition, favorable discriminant validity has been reported for this instrument [9]. Studies aimed at investigating the factor structure of the questionnaire have supported the three-factor model [23]. Therefore, there are major reasons for creating such a version: firstly, in the method of using separate instruments, each scale has its own biases and limitations of response, and secondly, it is time-consuming and will lead to the fatigue of the respondents, especially when other variables also are required to be measured. Short scales can save time and activity by removing additional items and complying with the principle of brevity, and as a result, reduce the annoyance of research participants. Also, paying attention to the factor loads of each infrastructure in the community of students of

general physical education unit (with regard to the development of social relations of this stratum), has determined their role in creating the current context of the society and in the next stages of entering the working society. Also it is a suitable way for managers in determining the decisions and position of each area and related infrastructure. In this way identifying the position of each area for planning and promoting it will be easily measurable. Therefore, the use of short scales that have high clinical and executive efficiency can be beneficial and cost-effective for both researchers and respondents.

Based on what was discussed and also considering that in the studied society, measuring dark personality traits can be very beneficial, the purpose of the present study is to investigate and evaluate the validity of the short version of the dark personality traits questionnaire in the students of General Physical Education Unit of Ferdowsi, Imam Reza, Islamic Azad, and Payam Noor universities of Mashhad, Iran.

2. Materials and Methods

The method of the present study is applied in terms of purpose and terms of type; it is in the category of descriptive-survey research, the data of which was collected using a questionnaire.

The statistical population includes all the students of Ferdowsi, Imam Reza, Islamic Azad, and Payam Noor universities in Mashhad who had chosen General Physical Education and Sports in the academic year of 2021-22 (N=400) using Morgan's table, 196 of them were randomly selected as a statistical sample. Also, after obtaining the necessary permits and coordination with the security unit of these universities, half of them were distributed and collected in person and the other half in virtual form.

To collect data, the standard dark personality questionnaire of Jonason and Webster (2010) [19] was used, which has 12 items and 3 components including Machiavellian (items 1 to 4), psychopathy (items 5 to 8), and narcissism (items 9 to 12). Also, item number 7 is reversed. In addition, this questionnaire is designed based on a 5-point Likert scale. The content validity of the dark personality questionnaire was also confirmed by 11 sports psychology professors after it was translated into Persian. The construct validity of the instrument was also investigated using exploratory and confirmatory factor analysis tests. Finally, the reliability of the questionnaire was 0.92 in a Pilot study conducted on 30 participants.

To analyze the data, descriptive and inferential methods were used, which are shown in the descriptive section of the demographic characteristics of the subjects using mean, standard deviation, frequency, etc. In the inferential part, kurtosis and skewness tests, one sample t-test, Kendall's W test, exploratory factor analysis, and confirmatory factor analysis of the second stage were used. In addition, all the statistical analyzes were conducted using SPSS version 24 and Lisrel 8.8.

In the following, to confirm the validity of the dark personality questionnaire in Iranian sports, exploratory and confirmatory factor analysis was used. In this analysis, using the principal component analysis method and eigenvalues greater than 1, 3 factors including Machiavellianism, narcissism, and psychopathy were confirmed, and the factor loadings of all items were more than the base value (0.40). To determine that the dark personality questionnaire in sports is saturated with several significant factors, two major indicators: 1. eigenvalues, and 2. the variance ratio explained by each factor, were also taken into consideration, and the three factors in total explained 58.04 of the percentage of the variance of the dark personality in sports and emphasized the multidimensionality of the instrument in sports.

Table 1. KMO and Bartlett's test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.750
Bartlett's test of Sphericity	Approx. Chi-Square	306.839

	df	66
	Sig.	0.001

The results of Table 1 show that all the required assumptions related to the use of the factor analysis method have been observed. The Kaiser-Meyer-Olkin test is an indicator of sampling adequacy. Based on the mentioned test, it is possible to determine the degree of belonging of the variables to each other (factor causality) and, as a result, their suitability for factor analysis, as well as to determine the suitability of each variable on its own. Considering that its value is equal to 0.750, therefore, the judgment about it is reported as favorable. Also, in Bartlett's sphericity test, the assumption of correlation between items is investigated. According to the chi-square value and the significance level (X^2=306.839, P<0.001), it is concluded that there is a correlation between the items, therefore, it is permissible to continue and use other stages of factor analysis.

Table 2. Results of the variance share of each factor in the triple-factor model of Dark Triad.

Extraction Sums of Squared Loadings			
Factor	**Total**	**% of Variance**	**Cumulative %**
Machiavellian	2.687	22.395	22.395
Psychopathy	2.152	17.936	40.331
Narcissism	2.126	17.716	58.047

Table 2 shows the eigenvalues, the variance of the factors and their cumulative variance percentage. As can be seen, the percentage of variance for factor 1 (Machiavellian) is equal to 22.395, factor 2 (Psychopathy) is equal to 17.936, and factor 3 (Narcissism) is equal to 17.716. Therefore, the predictive power of this model based on the total variance of the three factors is equal to 58.047%, which is considered a suitable and acceptable value.

Table 3. Results of principal components analysis with Varimax rotation on the factor load of the Dark Triad items in sports.

Items No.	Component		
	1	2	3
1	.52		
2	.57		
3	.54		
4	.56		
5		.51	
6		.67	
7		.45	
8		.59	
9			.62
10			.57
11			.61
12			.67

The results of the factor analysis presented in Table 3 show that the dark personality items in sports include 58.047% of the total variance. The results of the factor load of the items show that the factor load of all the items is acceptable.

After identifying the factor loadings of the items through exploratory analysis, using confirmatory factor analysis, the construct validity of the questionnaire was measured,

and the values of RMSEA, GFI, NFI, and CFI, were 0.067, 0.95, 0.92, and 0.96, respectively that confirmed the appropriateness of dark personality dimensions in sports. To measure the model fit, in addition to the ratio of chi-square to the df, the comparative fit index (CFI), goodness-of-fit index (GFI), normalized goodness-of-fit index (NFI), and the root mean square error of approximation (RMSEA) was used. The optimum ratio of chi-square to df is less than 3, a value greater than 0.90 for GFI, NFI, and CFI and less than 0.08 for RMSEA; therefore, the evaluation instrument of dark personality in sports has appropriate validity according to the mentioned values.
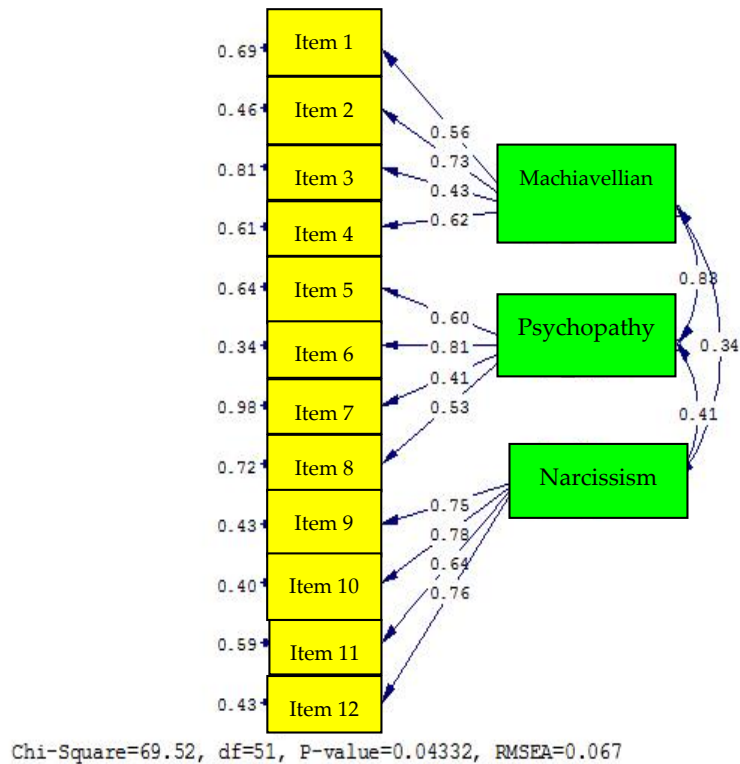

Chi-Square=69.52, df=51, P-value=0.04332, RMSEA=0.067

Figure 1. Confirmatory factor analysis of the Dark Triad questionnaire in sports (first stage).

3. Results

Based on the results, it was found that the highest and lowest frequency according to age is related to the age group "21 to 23 years" and "24 to 25 years". In addition, based on the academic semester, it was found that the highest frequency was related to the 1st and 2nd-semester students, and the lowest frequency was related to the 5th and 6th-semester students.

Also, to determine the normality of the data, skewness and kurtosis tests were used, and the results showed that the data distribution is normal and therefore parametric tests can be used.

Next, to check the status of the dark personality level, one sample t-test was used, the results of which are shown in Table 4.

Table 4. One sample t-test.

	Test value= 3		
	Mean	**t**	**Sig.**
Machiavellian	3.16	4.42	0.02
Psychopathy	3.45	3.85	0.001

Narcissism	3.20	3.51	0.001
Dark Triad	3.15	6.05	0.001

As can be seen in Table 4, the average score of the dark personality and all its components indicate a favorable situation, so their average score was reported to be more than 3. Also, according to the significance levels, all of which are less than 0.05, it can be said that there is a significant difference between the average of the dark personality and all its components with the hypothetical average.

Table 5. Kendall's W test.

	Mean Rank	Kendall's W	Chi-square	df	Sig.
Narcissism	2.20				
Machiavellian	1.88	0.366	17.073	2	0.001
Psychopathy	1.65				

As can be seen in Table 5, because the significance level of the Kendall's W test is less than 0.05, it can be said that there is a meaningful priority between the components of the dark personality, according to which, the most important priority is related to "narcissism", and "Machiavellian" and "psychopathy" are the second and third priorities.

Finally, according to the significant values for the 3 components of the dark personality in sports because they are in the range (-1.96 to 1.96) and according to the Lisrel output that you will see below, the degree of freedom is 8 and the amount of GFI, NFI, and AGFI are 0.93, 0.92, and 0.94, respectively. Also, the value of RMSEA is 0.075. According to the indicators and outputs of the Lisrel software, it can be said that the data are relatively compatible with the model and the presented indicators show that the presented model is a suitable model and the experimental data are in a good compatible with it.
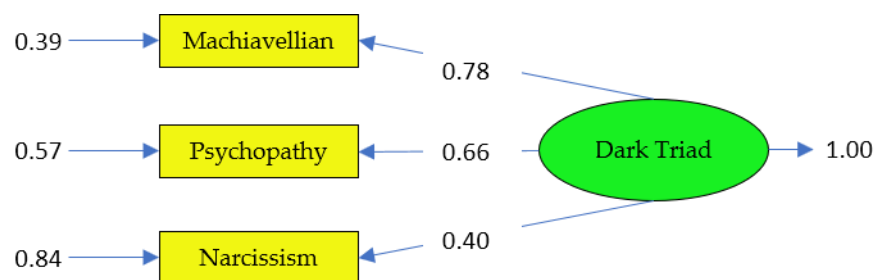

Figure 2. Confirmatory factor analysis of Dark Triad questionnaire in sports (second stage)

4. Discussion

Researchers are always looking for short and compact instruments to measure personality traits. In this regard, the aim of the present study was to validate the dark personality questionnaire. Accordingly, the dark personality 12-item questionnaire was used in the community of 400 students of the general physical education unit, and the results showed that this instrument has satisfactory validity and reliability in the students who pass the general physical education unit.

Also, the analysis of the components of the dark personality structure showed that this structure is a multidimensional scale and has three main factors: Machiavellianism, narcissism, and psychopathy. These results are consistent with the results of Jonason and Webster (2010) [19]. The extracted components showed a very high correlation with the related items, also the average factor loadings are high, which indicates a suitable factor

loading for the components. The findings indicate that the dark personality traits in the structure of the three-factor questionnaire in the students' society also have a similar structure to other studied cultures, and it is applicable in the sports society as well as in other studied societies. Also, the alpha coefficient was observed to be 0.92, which is consistent with the alpha value observed in the study of Jonason and Webster (2010) (0.62 to 0.87), so the dark personality questionnaire has high internal coherence and consistency. Jonason and Webster (2013) believe that the short version of the dark personality traits while having the major advantage of brevity should have the necessary flexibility like the long forms of the dark personality traits and act like them in practice. To check this feature, the short version should be correlated with the main scales and the long form of the constituent structures. Despite such evidence, it should be stated that studies such as Lee et al. (2013) have proposed that the triple traits measured by the dark personality questionnaire may not be able to display the unique features and characteristics of dark traits.

Also, according to the fact that the current research was conducted on students of the general physical education unit, sometimes in these classes it is observed that people engage in behaviors that have dangerous consequences for them or their classmates. The occurrence of such behaviors is mostly due to the lack of familiarity of these people with the rules and regulations of sports fields and the basic principles of physical education, and of course, in some cases, it is observed that a person does such things with different motives, and these motives can be hidden in the layers of the person's personality. For example, some students do anything to achieve their goals (in most cases, getting a perfect grade in class), including deceiving the class teacher, abusing classmates, and doing immoral and obscene things.

On the other hand, most of these students are at an age where they are very proud and narcissistic, and in most cases, they react very quickly and even get into a fight with the other person, which the teacher or class instructor, having the necessary knowledge about different personality traits, should able to manage the person in such situations and calm the atmosphere of the class. Therefore, it is clear that familiarity with dark personality traits can be effective and useful and help people in times of need.

5. Conclusions

It is recommended to sports coaches and teachers of physical education classes and leisure time to use this scale at the beginning of each semester to get to know more about the personality characteristics of students in their class and to measure these people; this can help them a lot in how to manage the class.

Finally, the results of the present study indicate that the revision of the dark personality questionnaire in the sports community is a multidimensional scale and it can be used in other non-clinical sports communities.

Conflicts of Interest: The authors declare no conflict of interest.

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