https://doi.org/10.48047/AFJBS.6.15.2024.112-119

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

Recognizing emotions based on facial expressions and the ability to feel empathy, and the dark triad traits

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. Volume 6, Issue 15, Aug 2024

Received: 15 June 2024

Accepted: 25 July 2024

Published: 15 Aug 2024

doi: 10.48047/AFJBS.6.15.2024.112-119

This research aimed to investigate the area of the so-called dark triad, in terms of emotional functioning. The current state of knowledge does not determine the existence or nature of the relationship between narcissism, psychopathy and Machiavellianism and empathy and the ability to recognize emotions based on facial expressions. Some researchers suggest a negative correlation between these factors, whereas others note a positive relationship between the two. There are also quite a few studies that do not demonstrate this relationship.

To verify the hypotheses, the three psychometric tools were used: the Emotional Intelligence Scale - Faces (SIE-T), the Shortened Empathy Quotient Scale (SSIE) and the Dirty Dozen. The respondents were recruited on social networking sites using the snowball method, thus collecting the results from 148 people - 89 women (Mage = 28.18) and 59 men (Mage = 31.59).

The obtained data confirmed the hypothesis about the existence of a relationship between the empathy quotient and psychopathy, and the significance of gender as a moderator in the relationship between the ability to recognize emotions and Machiavellianism was found. An insufficiently large group of respondents did not allow us to verify the remaining hypotheses.

Future research should focus on deepening the understanding of the emotional dimension in the area of the dark triad. It is recommended to research much larger groups, as well as using non-self-reported tools.

Key words: dark triad, emotional intelligence, emotions, empathy, facial expression

I. INTRODUCTION

A. Emotional Intelligence

Emotional intelligence is a relatively new concept that emerged at the beginning of the 20th century, and its creator is considered to be Edward L. Thorndike [1], who established the existence of the so-called social intelligence, which is responsible for the ability to understand others. The concept of this type of intelligence was made famous in public opinion by Daniel Goleman in his bestselling book *Emotional Intelligence* [2]. He postulated, among other things, that the lack of social skills and the ability to control emotions are responsible for life's difficulties.

Goleman also presented his definition of EI. According to him, "these are the abilities of us to recognize our own feelings and the feelings of others, the ability to motivate ourselves and manage emotions, both our own and those of people with whom we have some kind of bond." [2].

It remains a controversial issue whether emotional intelligence is an ability, competence or trait. The first model was postulated by Salovey and Mayer, who originally considered it to be a subtype of social intelligence [3]. EI has been defined as "the ability to monitor one's own and others' feelings, to distinguish emotions, and to use the information that emotions carry in thinking and acting [3].

The concept of emotional intelligence as a set of competencies was postulated by, among others, Goleman [2] and Boyatzis [4]. It is distinguished from the previous approach by the fact that competencies concern specific skills. Boyatzis's concept [4] is based on the assumption that direct observation of the behavior that a person demonstrates is required to assess EI - which consists of two components: emotional and social.

The third model was postulated by, among others, Bar-On [5] who defined emotional intelligence as "a number of non-cognitive capabilities, competencies, and skills that affect an individual's ability to cope with the demands and pressures of society [5].

Images from fMRI studies indicate activation of the medial prefrontal cortex, amygdala, and insula during emotional tasks [6]. The second hypothesis is the somatic marker theory, according to which the amygdala is a key structure in the decision-making process [7]. The experienced emotion is a signal about the possible consequences of making a specific decision.

Gender differences in emotional intelligence are not revealed in all studies. Most of the results point to the hypothesis that women achieve statistically higher EI than men [8]-[13]. There are also studies in which men achieve higher EI scores than women [14],[15]. However, scientists point to the age factor as a differentiating factor between the sexes – there are small or no significant differences between the sexes in students and adults, whereas they do occur among students [16]-[19]. Matczak and Piekarska [20] attempted to explain this phenomenon, putting forward the hypothesis that the decreasing difference between the sexes with age results from the slower development of EI in men, but this theory still requires verification.

Emotional intelligence not only allows us to better understand the emotions we experience, but it also has other applications. It may be an important factor in difficult situations, where it is responsible for regulating the level of perceived stress [21]-[23]. The perception and understanding of one's own emotions have a significant impact on stress sensitivity [24],[25]. EI also plays an important role in the selection of emotion regulation strategies [26]-[29], as well as conflict resolution strategies [30]. The emotions experienced also influence the performance of tasks, such as compassion, which facilitates prosocial behavior [31], or whether they favour or hinder concentration on the task [32].

B. *Dark Triad*

The idea of combining previously separately diagnosed traits such as narcissism, Machiavellianism and psychopathy appeared at the beginning of the 21st century [33]. Canadian scientists, after studying the available research results, noticed that three traits are particularly related to each other, or more precisely - they co-occur in the general population. The dimensional model locates the features of the dark triad in the gray zone between health and pathology. This means that a person with a higher intensity of these traits will not necessarily display antisocial behavior and act against the law, but they may exhibit socially undesirable behavior [34].

1. *Narcissism*

Narcissism, considered the brightest feature of the dark triad, is an issue that is believed to have its origins in the myth of Narcissus. We can distinguish two types of narcissism: subclinical and pathological, which we will otherwise call narcissistic personality disorder, and which is in the DSM-V classification under number 301.81 in cluster B - dramatic-inconsistent disorders [35]. In ICD-11, narcissism can be found under number 6D10.Z - personality disorders of nonspecific severity [36]. The essential components of NPD necessary for diagnosis are grandiose beliefs, strong egocentrism, or a constant sense of emptiness and boredom. An interesting element here is the criterion of lack of empathy, which is present in both classifications. When we talk about narcissism in the context of its subclinical form, we refer to narcissism as a trait. A person with a higher intensity of this trait is characterized by egocentrism, grandiose beliefs, or a hostile attitude towards the environment, and we can distinguish two types: grandiose and oversensitive narcissism [37]. The first form is characterized by extraversion, excessive self-confidence, and dominance, whereas the second is neurotic, withdrawn, and shy. The state of mental well-being of grandiosities is associated with high self-esteem, whereas in oversensitive people it results from the assessment of the environment.

The relationship between narcissism and emotional intelligence seems to remain unresolved in the psychological community. On the one hand, there is an opinion that people with a higher intensity of narcissism exhibit low emotional intelligence quotient, which is associated with low empathy [38]. On the other hand, researchers note that narcissistic people exhibit high empathy, which allows them to manipulate their environment [39]. Since empathy is one of the dimensions of EI, a high EI quotient is found in narcissistic people [40].

2. *Machiavellianism*

The term Machiavellianism was first used by Richard Christie and Florence Geis in the 1970s. The authors linked the behaviors occurring in the general population with the content present in the work of the Italian philosopher. On this basis, researchers attempted to characterize this trait using five dimensions, which they presented in the monograph Studies in Machiavellianism [41]. These dimensions include pessimistic anthropologism, utilitarianism of moral norms, distrust, high motivation to achieve success, and emotional coldness. As for etymology, research indicates the environment as the main factor conditioning the occurrence of Machiavellianism [42].

One of the symptoms of high intensity of Machiavellianism in the literature is the so-called coldness syndrome, or "lack of emotional involvement in the relationship and empathy, failure to take into account the needs and goals of the partner" [43]. However, research seems to contradict this theory. Empirical data indicate that people with a high level of Machiavellianism understand the emotions and expectations of others, but this is not something that influences the decisions they make [44]. These results stand in interesting contrast to the postulated low empathy of Machiavellians. McHoskey, Worzel and Szyarto [45] distinguished two types of Machiavellianism: cold (WINTER) and hot (GOMACH). The first one was created in relation to primary psychopathy and is characterized by an absolute pursuit of the goal, cynicism and a lack of guilt [44]. The second one comes from the concept of secondary psychopathy, it is much more impulsive, due to experiencing strong internal conflicts, and its emotional orientation is definitely stronger than the cognitive one [44].

People with high levels of Machiavellianism score lower on both self-report questionnaires and performance EI measures [46]-[49]. Machiavellianism also negatively correlates with

empathy, a component of EI [50]. Such people also exhibit difficulties in recognizing emotions, both their own and those of others [46]. Low ability to feel empathy is one of the determinants of Machiavellianism [51], as are low social skills [50],[52].

3. *Psychopathy*

The features of psychopathy include high impulsivity, lack of or very low insight or guilt, and aggression [53]. The boundary between subclinical psychopathy and personality disorder may seem blurry.

Subclinical, or non-criminal psychopathy, affects the general population and is distinguished from the disorder by the lack of more serious antisocial behavior [54]. People with high levels of this feature are often referred to as successful psychopaths [55]-[57]. Such people occupy high positions (an element of success), whereas simultaneously exhibiting interpersonal and cognitive characteristics of psychopathy [56]. As studies indicate, people with high psychopathy seem to have a lower level of emotional intelligence [57],[58]. However, there is data that contradicts this statement. Pastwa-Wojciechowska [59] conducted research on a group of prisoners, distinguishing a group of psychopaths from them. They obtained higher scores on the emotional intelligence scale than the studied commandos, who, despite not breaking legal norms, showed psychopathic traits.

Furnham, Richards and Paulhus [60], 10 years after the first use of the term dark triad, focused on the theoretical and psychometric problems related to the discussed model. The first important element was the separation of the clinical form from the subclinical one. The dark triad focuses on socially undesirable traits, emphasizing their non-pathological nature. The attempt to determine the subclinical nature of these traits is the theoretical pillar of the issue. Additionally, researchers set themselves the task of discovering the biological basis of the occurrence of the triad. In the original studies, Canadian psychologists did not look for answers to the eternal question: nature or nurture. Since then, many studies have been conducted on the etiology of the occurrence of higher intensity of these traits, and their results have indicated a genetic basis for all three traits, while noting the participation of the environment in the etiology of Machiavellianism [42][49][61]. The last issue on which researchers focused was psychometric problems, such as the tools used so far to examine the intensity of these traits.

Table I. T-Test for independent samples

		Statistic	df	p
SSIE	t Welch	1.810	131	0.036
SIE-T	t Welch	0.985	114	0.163

H_a μ Women> μ Men

Table II. Gender and Dark Triad T-Test

		Statistic	df	p		Effect size
Dark Triad	t Welch	-2.36	107	0.010	d Cohen	-0.404

H_a μ Women< μ Men

II. METHOD

A. *Participants*

The study involved 89 women, and 59 men selected from the general population. The study participants were between the ages of 18 and 70. They came from various types of places of residence, from villages to cities with more than 500,000 residents. The education of the study participants can also be presented using a spectrum: from secondary school to doctorate and postgraduate studies.

B. *Materials*

The study used three questionnaires: the Dirty Dozen, the Shortened Empathy Quotient Scale (SSIE), and the Emotional Intelligence Scale – Faces (SIE-T). Socio-demographic data were collected using a metric consisting of questions about age, gender, size of place of residence, and education. The entire study took an average of 10 to 20 minutes to complete.

C. *Hypothesis*

1. The intensity of the dark triad traits is negatively correlated with the level of the ability to recognize emotions.
2. The intensity of the dark triad traits is negatively correlated with the empathy quotient
3. Men are characterized by a stronger intensity of the dark triad traits than women.

Table III. Correlation between dark triad traits and the ability to recognize emotions and empathy quotient

Dep	Pred	Estimate	SE	95% Confidence Intervals		β	z	p
				Lower	Upper			
SSIE	NAR	0.1095	0.164	-0.211	0.430	0.0582	0.669	0.503
	PSYCH	-0.9454	0.231	-1.398	-0.492	-0.3737	-4.091	< .001

	MACH	0.0854	0.191	-0.289	0.460	0.0403	0.447	0.655
SIE-T	NAR	0.0845	0.263	-0.431	0.600	0.0288	0.321	0.748
	PSYCH	0.0992	0.434	-0.752	0.950	0.0252	0.228	0.819
	MACH	-0.3025	0.380	-1.047	0.442	-0.0916	-0.797	0.426

III. RESULTS

In order to determine the differences between the sexes in the levels of the studied variables, a t-test for independent samples was conducted. Statistically significant results were obtained for the empathy quotient (Table I) and the dark triad (Table II). It can therefore be concluded that women obtain higher scores on the empathy quotient scale than men. The second conclusion may be the statement that men are characterized by a higher intensity of dark triad traits than women.

The existence of a relationship between the level of the ability to recognize emotions based on facial expression and the features of the dark triad: Machiavellianism, narcissism and psychopathy was examined. For this purpose, structural equation modeling (SEM) was performed, the design of which is presented in Table III. The empathy quotient and the ability to identify emotions based on facial expression were designated as endogenous variables, and the dark triad features were considered exogenous. As can be concluded from the conducted analyses, psychopathy negatively correlates with the empathy quotient. This means that the higher the intensity of psychopathy, the lower the empathy quotient. The conducted research failed to find other statistically significant relationships in this area.

Next, in order to determine the influence of gender on the relationships between the dark triad traits and empathy and the ability to identify emotions, structural equation modeling was performed again, and the results are presented in Table IV.

A statistically significant result was obtained only in the case of Machiavellianism and the ability to recognize emotions. This shows that gender has a statistically significant effect on the correlation of these two factors.

This effect was then checked using Omnibus Tests. From the conducted analyses, it can be concluded that the correlation between the ability to identify emotions based on faces is correlated with Machiavellianism only in men, where $p = 0.038$, whereas in women $p > 0.05$ (Table V) This means that with the increase in the intensity of Machiavellianism in men, the level of the ability to recognize emotions decreases.

Table V. Gender as a moderator of the relationship between Machiavellianism and the ability to recognize emotions

	Estimate	SE	95% Confidence Interval		β	t	p
			Lower	Upper			
Women	0.522	0.398	-0.265	1.3091	0.158	1.31	0.192
Men	-0.786	0.375	-1.528	-0.0453	-0.238	-2.10	0.038

IV. DISUSSION

A. *The intensity of dark triad traits is negatively correlated with the level of ability to recognize emotions.*

The analyses conducted did not confirm the hypothesis.

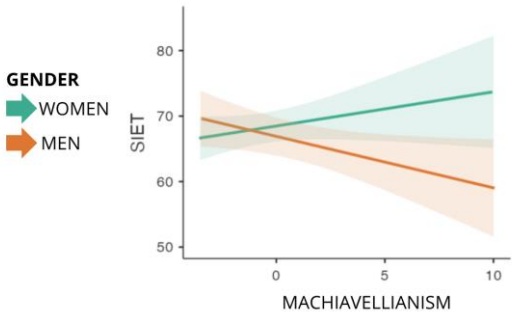
The results of this research are in contradiction with studies indicating a relationship between psychopathy and the ability to recognize emotions based on facial expressions [62],[63]. In the cited study [63], children with an increased level of psychopathy needed more time to recognize the expression of sadness than children with a low intensity of this trait, and in the case of fear they made significantly more mistakes than children from the general population. However, the current state of knowledge is not clear on this topic, as there are studies in which such a correlation did not occur [64] or it was positive [65]. Unfortunately, researchers Glass and Newman [64] did not explain the reason for the conclusion obtained, only suggesting further development of research in this direction. In the second case, the results of the study indicated that people with a higher intensity of psychopathy received higher scores on both the perception and emotion regulation scales. The researchers explained this by the fact that these people developed strategies that were supposed to compensate for the deficiencies in the area of empathy.

Table IV. The influence of gender on the relationship between empathy quotient, emotion identification ability and the DT

Endogenous variables	Exogenous variables	Estimate	SE	95% Confidence Intervals		β	z	p
				Lower	Upper			
Gender		-7.5593	3.901	-15.163	0.228	-0.50006	-1.9378	0.053
Empathy quotient	Narcissism	0.2579	0.342	-0.423	0.904	0.17888	0.7549	0.450
	Psychopathy	0.1256	0.519	-0.824	1.164	0.06367	0.2419	0.809

		Machiavellianism	0.3831	0.428	-0.480	1.231	0.20872	0.8952	0.371
	Gender		4.9526	5.850	-6.112	16.824	0.21531	0.8466	0.397
The ability to identify emotions based on facial expression		Narcissism	-0.3903	0.542	-1.540	0.607	-0.17787	-0.7205	0.471
		Psychopathy	1.5658	0.856	-0.388	3.049	0.52176	1.8286	0.067
		Machiavellianism	-1.8933	0.738	-3.446	-0.529	-0.67790	-2.5661	0.010

Fig. 1. Gender as a moderator of the relationship between Machiavellianism and the ability to recognize emotions



This ambiguity of the results requires further exploration of the relationship between the dark triad and emotional intelligence. Interestingly, the conducted analyses allowed for the statement that gender moderates the relationship between the ability to recognize emotions based on facial expressions and Machiavellianism (Fig. 1). We can state that in men, Machiavellianism is negatively correlated with the level of ability to identify emotions. Such a relationship was not found in women. These differences may result from differences in the socialization process of women and men [66]. As the researcher suggests, behaviors characterized by Machiavellianism are socially accepted in the case of men, hence they are not required to develop compensatory strategies. Women, on the other hand, are raised to be caregivers, and their main task is to build and maintain relationships with others [67], which is not facilitated by Machiavellian behavior and views.

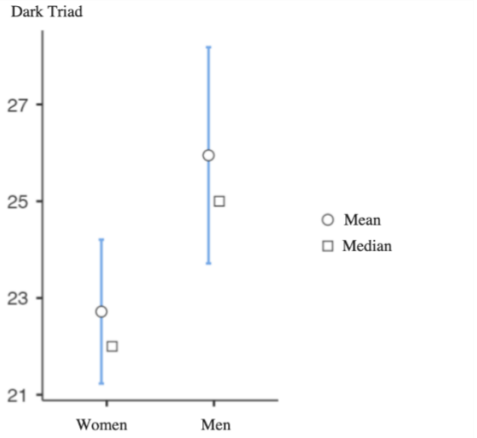
B. *The intensity of dark triad traits is negatively correlated with the empathy quotient.*

The research conducted as part of this work partially confirmed the hypothesis. It resulted from them that psychopathy is negatively correlated with the empathy quotient, but no such correlation was demonstrated with the remaining components of the dark triad. These conclusions indicate that the higher the intensity of psychopathy, the lower the empathy quotient. The lack of correlation suggests that we cannot conclude about the relationship between empathy and narcissism and Machiavellianism.

The current state of knowledge is ambiguous regarding the correlation of empathy and psychopathy, because some of them suggest the existence of such a relationship [68], whereas others failed to demonstrate this relationship [69]-[71]. The remaining traits included in the dark triad are also expected to be correlated with low levels of empathy [72],[73].

The lack of a relationship between empathy and narcissism and Machiavellianism may be due to, among other things, the use of a self-report questionnaire in this study to determine the level of empathy quotient. As mentioned earlier, the results obtained using this type of tool may not be consistent with the actual intensity of empathy [74],[75].

Fig. 2. Gender differences in the intensity of the dark triad



C. *Men are characterized by a stronger intensity of dark triad traits than women.*

The results obtained in this study confirmed the hypothesis (Fig. 2). This means that men score higher on the dark triad scale than women, which confirms the current state of knowledge [33]. This may be related to the socialization process, as well as the stereotypical approach to gender roles and behaviors [76]. The way boys are raised accustoms them to undertake socially accepted, in their case, egoistic behaviors, as well as an identical approach to social interactions. This theory is confirmed by the results of the research by Jonason et al. [77], who showed that whereas men actually score higher on the dark triad scale overall, they were characterized by a lower intensity of prosocial narcissism

than women, whereas maintaining a higher level of antisocial psychopathy.

CONCLUSION

The dark triad is still not fully explored and requires further exploration. Although researchers have focused primarily on studying disorders associated with dark triad traits (narcissistic personality disorder and antisocial personality disorder), it is important to also focus on the functioning of individuals with higher levels of narcissism or psychopathy. Machiavellianism itself, which is not reflected in a specific disorder, is also a largely unexplored concept. A more thorough exploration of this topic could have a significant impact on improving the functioning of rehabilitation programs, as well as helping these individuals establish better and healthier social relationships.

In further exploration of this topic, it may be important to use a much larger research group in order to apply more advanced statistical analyses. It is also worth looking at the intensity of the dark triad in the specified groups. This may allow us to notice nuances in the occurrence of higher levels of these traits, as well as the functioning of these individuals.

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