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EMOTIONAL INTELLIGENCE AND MACHIAVELLIANISM: A META-ANALYSIS

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Abstract: Emotional intelligence (EI) has spurred great interest over the last decades for its promising applications in life, work, and education. Research has mainly focused on the positive effects of emotional intelligence, although the appraisal, control and regulation of emotions can potentially lead to negative outcomes followed by adoption of non-cooperative behavioral strategies, such as Machiavellianism. The aim of the present study was to examine whether there is negative correlation between emotional intelligence and Machiavellianism. To determine whether high EI levels are associated with low Machiavellianism levels, a systematic review and meta-analysis was conducted by combining the results of multiple studies concerning the relationship of EI with Machiavellianism. Correlation coefficients were considered as the effect size of examination. Of the publications identified, a total of 29 studies from 17 published papers met the inclusion criteria according to the meta-analysis methodology. Study characteristics and reported results revealed high heterogeneity across the studies included. Estimates of r = -.267 and r = -.25 in the meta-analysis process with fixed effect and random effects models, respectively, confirmed the negative relationship between emotional intelligence and Machiavellianism.

Keywords: Emotional intelligence, Machiavellianism, Meta-analysis, Personality

Introduction

Emotional intelligence is a construct used by scholars to describe an approach to emotional characteristics that potentially contribute to the success of individuals in their everyday and working life (Bracket et al., 2011; Carillo et al., 2018; Zeidner et al., 2004). Emotional intelligence has launched a more powerful and empirically independent construct of social intelligence, based on personal abilities and traits (Bar-On, 1997; Davies et al., 1998; Goleman, 1995, 1998; Mayer & Salovey, 1997; Petrides & Furnham, 2000; Roberts et al., 2001) that seem to be related to different aspects of personality, even including the more

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deviant (Coté, 2014; Davies et al., 1998). Therefore, a growing number of studies distinguish circumstances under which emotional intelligence seems to appear inhibitory and even deleterious to a person and their environment, suggesting the existence of a "dark" side of emotional intelligence (Davis & Nichols, 2016; Kilduff et al., 2010).

It has been supported that individual tend to employ emotional intelligence skills both to misinterpret events and to provoke situations under self-beneficiary circumstances by emotionally manipulating their colleagues (Kilduff et al., 2010). Emotional manipulation is a form of deviant social influence that aims to change the behavior, perceptions, or personal beliefs of others, using indirect and, sometimes, unethical tactics (Grieve & Mahar, 2010), which are associated with the so-called Dark Triad of Personality. The latter term refers to the triptych of narcissism, Machiavellianism and psychopathy, and their association in a "callous and manipulative interpersonal style" (Jones & Paulhus, 2010). It has been suggested that while people with high emotional intelligence levels empower socially and organizationally a work environment, they might invoke emotions to communicate messages that serve their own personal interests through manipulative and unethical tactics (Kilduff et al., 2010).

The aim of the present study was to test the existence of an association between emotional intelligence and Machiavellianism, to achieve better understanding of the aspects of personality examined and potentially to advance research in this field, in terms of building cumulative knowledge in the relevant literature (Miao et al., 2019; Walker et al., 2019). To this end, a systematic review and meta-analysis was applied to combine the results of multiple relevant published studies. A meta-analytic summary of the quantitative evidence on the association between these concepts will provide researchers with a timely overview of the state-of-the-art knowledge on emotional intelligence and Machiavellianism and identify prospects for further research.

Emotionally intelligent behavior and Machiavellianism

Several years of research on emotional intelligence (EI) have provided the necessary material for meta-analytic research that has shown the predictive power of EI in areas such as education, academic achievement, mental and physical health (Bar-On, 1997; Martins et al., 2010; Mavroveli & Sanchez-Ruiz, 2011; O'Connor et al., 2019; Petrides, 2011).

Emotional intelligence, conceptualized as a subset of social intelligence skills, comprises monitoring oneself and others' feelings and emotions, distinguishing between them, and using this information to guide one's thinking and actions (Mayer & Salovey, 1997). The challenges of research on the conceptualization of EI raised extensive discussion on what constitutes emotionally intelligent behavior (Fiori & Vesely Maillefer, 2018). Also, the interaction among the components of EI, regardless of the theoretical approach adopted, appears to attract high interest, as it seems helpful in understanding the complexity of emotionally intelligent behavior (Vesely et al., 2018). Indeed, several studies (Bar-On, 2006; Cote et al., 2011; Konrath et al., 2014) showed that EI, contrary to initial conceptions, is positively related to negative outcomes such as emotionally manipulative behavior.

Dispositional tendencies towards emotionally manipulative behavior have led to further examination of the non-cooperative strategy and one part of the Dark Triad in particular, namely, Machiavellianism (Abell et al., 2016; Ali et al., 2009; Nagler et al., 2014).

Individuals who score high when evaluated for these traits are more prone to committing crimes, causing social disruption, and creating problems when given positions of leadership (Blickle et al., 2020). They also tend to lack empathy and be disinclined to believe in others' good intentions, although they score highly in agreeableness. Machiavellians tend to mislead, manipulate, and act maliciously and immorally against others around them (Monaghan et al., 2016). Machiavellian behavior appears to be associated with emotional intelligence / management difficulties, cold-heartedness, narcissistic dispositions, antisociality, and empathy deficits (Miller & Lynam, 2015; Monaghan et al., 2016). Taking into consideration the above, Machiavellianism is defined as "a psychological construct reflecting individual differences in manipulative and strategic thinking, pragmatic morality, and a cynical outlook on life" (Miller et al., 2017; Persson, 2019). It is a "personality syndrome" describing an almost two-sided interpersonal style associated with cynicism about people, social well-being, and the pragmatic notion of morality, on the one hand, and self-motivation based on oneself, on the other (Christie & Geis, 1970; Jones & Paulhus, 2009; Wilson et al., 1996).

Although studies of the relationship between EI and the Dark Triad have not yielded consistent results, many of them have found a negative association between EI and the Dark Triad traits (Walker et al., 2019). This inverse relationship implies that individuals with high scores of measured EI tend to score low in Machiavellianism, narcissism, and psychopathy assessments. It is worth mentioning that the reported correlations cover a wide range of samples (Czarna et al., 2016; Nagler et al., 2014), meaning that a variety of sample groups, ranging from employees to students of various age, that come from different countries are taken into consideration. Indeed, the differences reported between genders, age groups, professions, and educational levels concerning the relationship of EI with Machiavellianism revealed that one's behavior can be affected by culture, time of the year, or the emotional condition of the individual participating in a research questionnaire.

It has also been claimed by one strand of research that the Dark Triad traits are linked to desirable outcomes in the working environment, in higher sexual intentions, and in good leadership performance, usually with the use of manipulative tactics with others (Jonason et al., 2009; Spurk et al., 2015). Most of the published work on the relationship between EI and Machiavellian behavior shows a negative correlation between them. That is, when individuals score high in EI, they tend to score low in Machiavellianism, implying that a Machiavellian person tends to have low EI (Austin et al., 2007; O'Boyle et al., 2012). This means that high Machs are less emotionally intelligent and socially competent in intimate situations or in cases of social exposure in a work environment (Pilch, 2008; Sjoberg, 2003; Szabo & Bereczekei, 2017; Zhang et al., 2014).

The negative correlation between EI and Machiavellianism is also attributed to genetic and non-shared environmental factors (O'Connor & Athota, 2013; Petrides et al., 2011; Szijjarto & Bereczekei, 2014). It is notable that the association between the variables under examination confirms that EI can potentially occur in a dark side (Austin et al., 2004; Austin et al., 2007; Jauk et al., 2016; Malhotra, 2016; Vonk et al., 2015), leading to emotionally manipulative behavior (Bacon & Regan, 2016; Nagler et al., 2014), lack of empathy (Ali et al., 2009) and even to sadistic behavior (Plouffe et al., 2017). Further, the negative correlation between EI and Machiavellianism seems to play a significant role in the association of moral identity trait, in the sense of the importance of morality in one's self- perception (Côté et al.,

2011), with EI. Indeed, it seems that EI may complicate the relationship between Machiavellianism and its behavioral outcomes. More specifically, the versatility of EI, especially in so far as emotional regulation is concerned, may support an individual to regulate the responses of others to meet their personal goals. This is a source of information concerning one's moral identity (Cundiff, 217).

The aim of the present study was to conduct a meta-analysis to test the previously identified existence of a negative relationship between emotional intelligence and Machiavellianism. The hypothesis was that emotional intelligence would be negatively associated with Machiavellianism, despite the expected heterogeneity of the included studies.

METHOD

An extensive search for relevant studies was performed in online bibliographical databases (Research Gate, Academia, PsychNet, Science Direct, Google Scholar) and closely related journals of management and psychology. The basic search was conducted with keywords "emotional intelligence", "Machiavellianism", "Dark Triad", "high machs", and "emotional intelligent", so as identify all the published studies that reported a relationship between emotional intelligence and Machiavellianism. To ensure the inclusion of all available studies relevant to the present study, the search was expanded to management and psychology conferences, and databases of master and doctoral theses (wherever the dissertations were available). All studies that were reported up to March 2020 were considered.

Inclusion and exclusion criteria

Studies included in the present meta-analysis had to meet two criteria: (1) They had to be empirical and quantitative; and (2) they should quantify the relationship between emotional intelligence and Machiavellianism, using standardized emotional intelligence and Machiavellianism measures. Theoretical articles, systematic reviews or meta-analyses were excluded. The search strategy is summarized in the PRISMA diagram (Moher et al., 2009) in Figure 1.

Coding process

The data extracted from each study (sample information, effect sizes, measures) were coded and recorded in a spreadsheet. The extraction was done independently by the authors, checked, and finalized by consensus. Samples were described in terms of sample size (*N*), mean age, percentage of females, and country. Brief qualitative sample descriptors such as adolescents, university students, employees, and adults (when no further description was

provided) were also included to be used in moderator analysis. The studies included in this

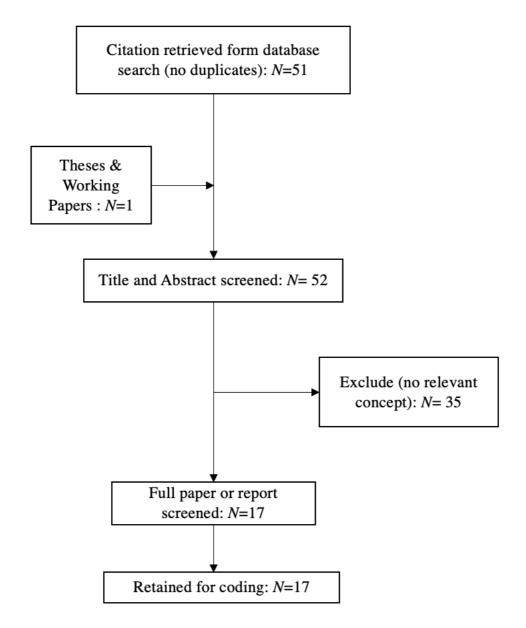


Figure 1: Search strategy process

Note: The exclusion of papers on the grounds of "no relevant concept" refers to those that examined the relationship between emotional intelligence and the Dark Triad but focused on narcissism only.

meta-analysis are given in Tables 1 and 2. Descriptive statistics of the measures of the emotional intelligence and Machiavellianism are given in Table 3. Higher means in emotional intelligence scores and Machiavellianism indicate higher level of emotional intelligence and Machiavellianism, respectively.

Table 1: Emotional intelligence measures used in the papers included in the meta-analysis

EI measure	Description					
Trait Emotional Intelligence	30-item questionnaire designed to measure global trait EI as a sum of					
Questionnaire (Short TEIQue;	fifteen (15) distinct facets of emotional intelligence.					
Petrides, 2009)	· ,					
Bar-On EQ-i:S (Bar-On, 2002)	51-item scale that provides a measure of total EI (designated as Emotional Quotient, EQ) and the five composite scales of Intrapersonal (associated with awareness of one's own feelings and positivity), Interpersonal (interpersonal/social skills), Adaptability (ability to cope flexibly with everyday problems), Stress Management and General Mood (happiness and optimism).					
SEIS (Schutte et al., 1998)	33-item scale that includes five items for emotional perception, six for emotional use, five for emotional understanding, and six for emotional management.					
MSCEIT (Mayer, Salovey, Caruso, & Sitarenios, 2003)	141-item test that describes abilities of resolving emotion-laden problems, including emotional perception, emotional use, emotional understanding, and emotional management.					
Situational Test of Emotion Management (STEM; MacCann & Roberts, 2008)	Developed to assess advanced emotional intelligence. Scores are relevant to the perception of others' emotions and indicates the ability to utilize such understanding to adjust one's own behavior. It includes 20 multiple-choice items in which participants select an action they would recommend for a character in a given scenario.					
Situational Test of Emotion Understanding (STEU; MacCann & Roberts, 2008)	42-item test that focuses on the ability to read the emotions of others. The test-taker is required to choose which of five emotions is most likely to result from an emotional situation.					
Self-Report Emotional Intelligence Test (SREIT) (Schutte et al., 1998)	28-item scale with subscales that measure the appraisal of emotions in the self, the appraisal of emotions in others, emotional regulation of the self, and the utilization of emotions in problem solving.					
Schutte Self-Report Emotional Intelligence Scale (SSREI) (Schutte et al. 1998)	33-item test that relate to the three aspects of EI: appraisal and expression of emotion, regulation of emotion, utilisation of emotion.					
Social Skills Inventory (SSI: Riggio & Carney, 2003)	90-item scale that measures emotional intelligence through dimensions such as emotional expressivity, emotional sensitivity (receiving and interpreting others' emotions) and emotional control (regulating emotional displays)					

Effect sizes

The main purpose of running a meta-analysis is to obtain a generalized estimate of the effect size in the population, by combining the separate estimates of effect size from a range of studies (Field, 1999). The general outcome of this estimation is a weighted mean of the

Category	Description	Machiavellianism Measure						
	Simple measure	MACH IV (Christie & Geis, 1997)						
Simple	of	German Machiavellian Scale (Henning & Six, 2008)						
	Machiavellianism	German Machiaveman Scale (Hemining & Six, 2008)						
	Measures created	Dark Triad Dirty Dozen (Jonason & Webster, 2010)						
Composite	from scores on	Short Dark Tried (Jones & Davillage 2014)						
	multiple scales	Short Dark Triad (Jones & Paulhus, 2014)						

Table 2: Machiavellianism measures used in the meta-analysis

included effect sizes, where the weights reflect the accuracy of each effect size so that less precise effect sizes are given less weight in the calculations. An effect size is a measure of the magnitude of the observed effect. This can be a standardized measure (although in many cases effect sizes are not standardized), which makes it feasible to compare and combine effect sizes across different studies that have measured different variables under different scales of measurement (Field, 2005).

The present study employed the correlation coefficient as effect size, because of its commonness, familiarity, and versatility as an effect size measure (Field, 2001). Our meta-analysis examined the relationship between continuous variables, so the Pearson correlation coefficient (r) was used to summarize the relationship between emotional intelligence and Machiavellianism. Also, means and standard deviations for each measure were tracked down. In cases where effect sizes were reported for the subdimensions of emotional intelligence (Bacon & Regan, 2016), the r was calculated using the mean effect size of these subdimensions (Borenstein et al., 2009) The aim of the study was to estimate the actual level of the correlation between emotional intelligence and Machiavellian behavior using correlation coefficients of the studies, because this is the statistical expression of the relationship's strength between two continuous variables.

Data analysis

Analysis of the data extracted from the included studies was conducted using the Comprehensive Meta-Analysis software (CMA 3.0). The observed effect size (r) was converted into a standard normal metric using Fisher's r-to-Z transformation:

$$Z_{r_i} = \frac{1}{2} \log_e(\frac{1+r_i}{1-r_i})$$
, where *i* stands for each study.

Basic meta-analysis to estimate the average effect size of all studies was run. Categorical moderators were assessed by comparison of subgroups. Furthermore, indicators and tests for the presence of publication bias were computed (Field 2001; Field, 2005). Also, a test of heterogeneity of the effect sizes, that contributes to the detection of possible moderators, was conducted.

Two popular statistical models for meta-analysis, the fixed-effect model and the random effects model were used. Under the fixed-effect model it is assumed that there is one true effect size that underlies all the studies in the analysis, and that all differences in observed effects are due to sampling error. By contrast, under the random effects model the true effect

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size might differ from study to study. For example, the effect size might be higher (or lower) in studies where the participants are older, or more educated, or healthier than in other studies. The term "random" reflects the fact that the true effect sizes of the studies included in the analysis are assumed to be a random sample of all possible effect sizes that could have occurred.

Table 3: Descriptive summary of studies included in the meta-analysis

Citation	Study code (author, year, study)	Sample Type	Country	Female %	Mean Age	N 84	
(Ali et al., 2009)	Ali et al., 2009	University students	UK	79.7	20.70		
(Pilch, 2008)	Pilch, 2008	University students	Poland	51.4	Mode:20-24	173	
(Petrides et al.,	Petrides et al., 2011 (1)	Adults	Canada-USA	85.5	41.17	214	
2011)	Petrides et al., 2011(2)	Adults	Canada-USA 85.5		41.17	214	
	Austin et al., 2006 1A	University students	UK	68.8	21.14	199	
(Austin et al., 2006)	Austin et al., 2006 1B	University students	UK	68.8	21.14	199	
	Austin et al., 2006. (2)	Adults	UK	68.03	40	341	
	Jauk et al., 2016 1male	University students	udents Austria		24.60	109	
(I I (I 2016)	Jauk et al., 2016 1female	University students	Austria	100	24.60	232	
(Jauk et al., 2016)	Jauk et al., 2016 2males	University students	Austria	0	24.60	109	
	Jauk et al., 2016 2females	University students	Austria	100	24.60	232	
(A+:+ -1 2014)	Austin et al., 2014 1	University students	Canada	70.4	18.63	369	
(Austin et al., 2014)	Austin et al., 2014 2	University students	Web	75.7	22.25	432	
(O'Connor & Athota, 2013)	O'Connor &Athota, 2013	Workers	Australia	66.65	mode: 20-46	884	
(Szijarto & Bereczekei, 2014)	Szijarto & Bereczekei, 2014	University students	Hungary	52.86	21.60	157	
(Nagler et al., 2014)*	Nagler et al., 2014	Adults	Web	73.7	22.71	594	
(Szabo & Bereczekei, 2017)	Szabo & Bereczekei, 2017	University students Hungary		72.02	21.89	143	
(Zhang et al., 2014)	Zhang et al., 2014 1	Adolescents	China	50.25	15.82	396	
(Zhang et al., 2014)	Zhang et al., 2014 2	Adolescents	China	50.25	15.82	396	
(Vonk et al., 2015)	Vonk et al., 2015 1	University students	USA	82.2	20.40	929	
(vonk et al., 2013)	Vonk et al., 2015 2	University students	USA	82.2	20.40	929	
(Plouffe et al.,	Plouffe et al., 2017 1	University students	Canada	44.22	18.74	199	
2017)	Plouffe et al., 2017 2	University students	Canada	73.26	18.59	202	
(Cote et al., 2011)	Cote et al., 2011	Employees	Canada	73	39.29	252	
(Malhotra, 2016)	Malhotra, 2016	Adolescents	India	50	mode:13-18	240	
(Sichara 2002)	Sjoberg, 2003 1	Workers	Sweden	20	36	45	
(Sjoberg, 2003)	Sjoberg, 2003 2	Workers	Sweden	20	36	45	
(Bacon & Reagan,	Bacon & Reagan, 2016 1male	University students	UK	0	20.33	127	
2016)	Bacon & Reagan, 2016 1female	University students	UK	100	20.53	125	

^{*}Secondary data

Taking into consideration the range of the sample populations and the fact that not all studies are functionally equivalent, it seems that the random effects model provides a better description of the variability in the effect sizes and allows generalization to the general population. Categorical moderators were assessed by comparison of subgroups.

RESULTS

From the 17 articles included in the meta-analysis, 29 studies were extracted (Figure 1). Sample sizes ranged from 45 to 929 participants with a total N=6,446 participants. The majority of the participants was female. The largest proportion of the studies was conducted in Canada and USA (33.5%), with 13.7% from Australia, 13.5% from the UK, 13.3% from Europe, and 9.8% from Asia. It is noteworthy that a sizeable share of the sample (15.9%) had participated in research through web applications. Studies were conducted between 2003 and 2016.

The existence of heterogeneity of the included studies in the meta-analysis was confirmed, Q = 97.95, df = 28, p < .001. Significant variability across the samples was revealed, with value of I2 = 71.4% indicating substantial heterogeneity. Moreover, in the forest plot of the relationship between emotional intelligence and Machiavellianism (Figure 2), effect sizes and confidence intervals are presented for each study separately, together with the overall effect size.

The quoted results uniformly, except for only three cases, r = .04, r = .01, r = .16, showed a negative correlation ranging from r = .04 to r = -.383. Of note is that in each of the three cases that had found a weak positive correlation, trait emotional intelligence had been tested. It was observed that the generalized mean for the correlation between emotional intelligence and Machiavellianism remained negative for both fixed, r = -.267, and random effects model, r = -.250, confirming the hypothesis that emotional intelligence is negatively correlated with Machiavellianism. One categorical moderator (sample type) was evaluated using subgroup analysis. All sample types coded (adolescents, adults, employees, university students, workers) showed moderate to weak negative relationships with Machiavellianism in both fixed effect and random effects models (Table 4). However, university students seem to be, according to the fixed effects analysis, a significant moderator of the relationship between emotional intelligence and Machiavellianism, Q = 70.3, df = 17, p < .001.

Table 4: Subgroup analysis of sample types

	No. of	Point of estimate			
Group	Studies	Fixed effect	Random effects		
Adolescents	3	286	-0.294		
Adults	4	315	-0.314		
Employees	1	279	-0.279		
University Students	18	239	-0.214		
Workers	3	315	-0.315		

Model	Subgroup within study	Study name	Statistics for each study					Correlation and 95% CI					
			Correlation	Lower limit	Upper limit	Z-Value	p-Value	-1.	00 -0	.50	0.00	0.50 1	.00
	both	Alietal.,	-0.230	-0.423	-0.016	-2.106	0.035				-		
	both	Pilch, 2008	-0.383	-0.503	-0.247	-5.254	0.000						
	both	Petrides et	-0.370	-0.480	-0.248	-5.636	0.000						
	both	Petrides et.	-0.289	-0.408	-0.162	-4.329	0.000			—			
	both	Austin et. al,	-0.329	-0.448	-0.199	-4.788	0.000						
	both	Austin et. al,	-0.219	-0.348	-0.083	-3.122	0.002						
	both	Austin et. al,	-0.250	-0.347	-0.147	-4.688	0.000			—			
	female	Jauk et. al,	0.040	-0.089	0.168	0.605	0.545			-	+-		
	male	Jauk et. al,	-0.119	-0.301	0.070	-1.235	0.217				+		
	female	Jauk et. al,	-0.199	-0.320	-0.072	-3.057	0.002						
	male	Jauk et. al,	-0.169	-0.346	0.019	-1.761	0.078				+		
	both	Austin et. al,	-0.329	-0.417	-0.235	-6.543	0.000			—			
	both	Austin et. al,	-0.370	-0.448	-0.285	-8.036	0.000			-			
	both	O'Connor	-0.319	-0.377	-0.259	-9.825	0.000			-			
	both	Szijarto and	-0.160	-0.309	-0.003	-1.998	0.046			-	-		
	both	Nagler et.	-0.340	-0.409	-0.267	-8.606	0.000			-			
	both	Sjabo and	-0.129	-0.287	0.036	-1.538	0.124				+		
	both	Zhang et.al,	-0.370	-0.452	-0.281	-7.692	0.000						
	both	Zhang et.al,	-0.150	-0.245	-0.052	-2.993	0.003				·		
	both	Vonk et.al,	-0.319	-0.376	-0.260	-10.072	0.000			+			
	both	Vonk et.al,	-0.190	-0.251	-0.127	-5.843	0.000			-			
	both	Plouffe	-0.329	-0.448	-0.199	-4.788	0.000						
	both	Plouffe	-0.230	-0.357	-0.095	-3.301	0.001			—			
	both	Cote et.al.,	-0.279	-0.389	-0.161	4.529	0.000			—			
	both	Malhotra,	-0.359	-0.465	-0.244	-5.788	0.000						
	both	Sjoberg,	-0.230	-0.490	0.068	-1.516	0.129			<u> </u>	+		
	both	Sjoberg,	-0.300	-0.545	-0.007	-2.003	0.045		-		-		
	female	Bacon,	0.010	-0.166	0.185	0.110	0.912			-	 		
	male	Bacon,	0.016	-0.159	0.190	0.178	0.859			_	_		
xed			-0.267	-0.287	-0.247	-25.215	0.000			+			
andom			-0.250	-0.289	-0.209	-11.738	0.000			+			

Figure 2: Forest plot of the emotional intelligence and Machiavellianism studies

Furthermore, it is important in meta-analysis to consider the issue of publication bias, that is, the possible tendency of studies not to reach the stage of publication if their results are not "statistically significant". One approach, the "file drawer" analysis (Rosenthal, 1979), aims to compute the number of missing studies (with mean effect of zero) before the combined effect (Borenstein, 2005). Alternatively, the number of missing studies needed to nullify the effect should be called the 'failsafe N' has been suggested. Calculation of the 'failsafe N' in the present paper suggests that, to nullify the combined effect, a total number of 3,730 unpublished studies should be included in the meta-analysis. Given the criticism of the above tests (Becker, 2005; Field, 2005; Rosenberg, 2005), a more reliable test (Gerdevick & Heuch, 2014), extensively used in meta-analysis to test for publication bias (Begg & Mazumdar, 1994), was adopted, as it is recommended that two or more tests should be conducted to take account of their individual strengths and weaknesses (Borenstein et al., 2009; Kepes et al., 2012). The funnel plot for emotional intelligence and Machiavellianism was symmetrical (Figure 3) indicating that small sample studies are no more likely to report a more negative correlation than the larger studies. In addition, the rank correlation test (Begg & Mazumdar, 1994), which examines whether Kendall's rank correlation between the effect sizes and their variances equals zero, was applied in our case. It confirmed the funnel plot, being statistically significant, Kendall's tau = 0.274, p = .018.

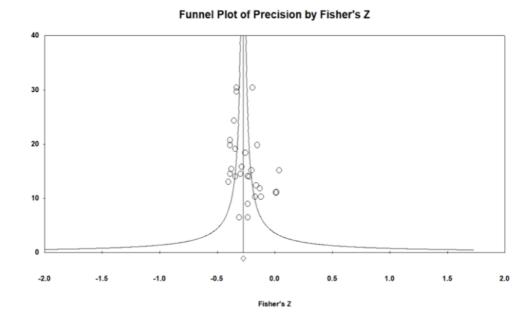


Figure 3: Funnel plot of the emotional intelligence and Machiavellianism studies

DISCUSSION

The present study aimed to examine the question of whether and to what extent a statistically significant relationship exists between EI and the non-cooperative strategy of behavior known as Machiavellianism through meta-analysis. The conduct of meta-analysis in a review is essential in detecting observed effects as statistically significant, with the advantage that the amount of information used in a meta-analysis can be improved. Furthermore, controversies arising from apparently conflicting studies could be settled and even generate new hypotheses for further research. Statistical analysis of findings of previously conducted studies formally assesses the degree of conflict and motivates for different results to be investigated and analyzed.

Considering that EI is related to personality traits such as conscientiousness, agreeableness, openness, and extraversion (Joseph & Newman, 2010; Van Rooy et al., 2005), and it is even reported that EI is positively related to a general personality factor (van der Linden et al., 2017), there is substantial evidence that EI generally relates positively to positive (e.g., prosocial) personality traits. This is important to consider here because measures of Machiavellianism (and other dark-side traits) have also been shown to correlate positively with standard personality trait measures (DeShong et al., 2017).

In the present systematic and meta-analytic review, a negative statistical correlation between Machiavellianism and emotional intelligence was established, suggesting that high scoring individuals in EI tend to be less, or even not at all, Machiavellian. The correlation coefficients ranged from -.383 to .04 in individual studies, with overall estimates from the meta-analysis of correlation coefficients extracted from 17 published articles confirming that high Mach tend to score low on EI evaluations. In the fixed-effect model presented above, it

is assumed that the studies included in the meta-analysis are sampled from a population in which the average effect size is fixed or can be predicted from a small number of predictors. As a result, the sample effect sizes are homogenous because they come from a population with a fixed average effect.

As far as the publication bias is concerned, the failsafe *N* indicator might best be seen as a heuristic which can help to put the question of publication bias in perspective. If someone is concerned that the observed effect is entirely an artifact of publication bias, the statement that "we would need 5,000 studies with an effect size of zero to nullify the observed effect" may help to move the conversation along to more subtle and relevant issues about publication bias, meaning that this method addresses the wrong question: it is usually more interesting to find out the biases in the data that can be corrected than to know how many more studies are needed to invert an inclusion.

The examined relationship between EI and Machiavellian behavior, as part of the Dark Triad of personality, is discussed in far fewer published papers in the literature than the two other facets of the Dark Triad, i.e., narcissism and psychopathy. It is widely recognized that there are challenges in emotionally intelligent behavior and the different aspects it can have in the balance of organizational and personal environment. This meta-analysis confirmed one of these aspects, Machiavellianism.

In conclusion, the examination of the studies included in the present meta-analytic review, confirmed the negative relationship between EI and Machiavellianism. However, because this attempt was based on a small number of studies, the overall result could be characterized as limited (Marlow, 2018). The present meta-analysis aimed to help in developing paradigms for understanding human behavior and focus more on important questions concerning the concepts under investigation. Furthermore, the overall findings of this review, that also correspond to the findings of similar work (Walker et al., 2019; Miao et al., 2019), provide an excellent basis for future research to explore the impact of this relationship that approaches the malicious side of personality. A particular potential topic for further research is the examination of the relation between EI and Machiavellianism with respect to the different components of both.

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Data Availability Statement

The study materials, data and analysis scripts used for this article are all presented in the tables and figures of the article.