The relationship between trait psychopathy and emotional intelligence: A meta-analytic review

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Abstract

Psychopathy is a personality construct that has been related to important emotional deficits. These findings have led to a growing interest in exploring if psychopathic traits are associated with emotional intelligence (EI). However, the literature exploring this association has revealed conflicting results. The aim of the present study was to provide a reliable estimate of the relationship between psychopathy traits and EI (measured as performance-based ability) through meta-analysis. A quantitative and systematic review of the literature using Scopus, Medline, Pubmed, and PsicINFO showed a total of 13 studies meeting inclusion criteria with a combined sample of 2401 participants. The meta-analysis revealed a significant negative relationship between both constructs, showing that higher psychopathic trait scores are related to lower EI levels. We propose several future research lines to clarify possible gaps and ambiguities in the current literature and a set of interesting clinical implications for the prevention, evaluation, and treatment of psychopathic traits by including EI factors in traditional models of psychopathy.

Keywords:

Emotional Intelligence, psychopathy, performance-based ability model, meta-analysis

1. Introduction

Psychopathy is a personality construct characterized by callousness, egocentricity, failure to form close emotional bonds, proneness to low anxiety, superficial charm, dishonesty and impulsive behaviour (Hare, 1991; Hare & Neumann, 2008). It is important to highlight that although the constructs of psychopathy and antisocial personality disorder have often been used interchangeably, they are not synonymous (Ogloff, 2006). Antisocial disorder only covers a part of psychopathy, antisocial behaviour while psychopathy is also characterized by emotional and affective deficits. Previous literature has shown that psychopathic traits are associated with aggressive behaviour, delinquency, and even crime (Frick et al., 2003; Piatigorsky and Hinshaw, 2004). Given its potential negative consequences, the study, control, and treatment of trait psychopathy is of great importance to society.

At a neurobiological level, previous research supports the importance of emotion-related neural circuits implicated in trait psychopathy, including regions such as the amygdala, orbitofrontal cortex, and ventromedial cortex (Blair, 2001; Koenigs et al., 2011). Of particular importance seems the involvement of the amygdala. Tiihonen et al (2000), using volumetric magnetic resonance imaging (MRI), found that a reduced amygdaloid volume was associated with high scores on trait psychopathy. Further, Kiehl et al. (2001), using functional MRI, showed a decreased amygdala response in individuals scoring high in psychopathic traits during word processing with negative valence. The amygdala is considered an essential structure for the emotional processing of sensory signals (Zald, 2003). In this way, previous studies have focused on looking at the relationships between psychopathy and emotional aspects. People with psychopathic traits present deficits in the ability to detect and understand the emotions of others (Visser et al., 2010) and are less able to regulate their mood (Ali et al., 2009; Austin et al., 2014).

They are characterized by a lack of empathy, and particularly show impairments in recognizing sad and fearful facial expressions (Bird and Viding, 2014; Montagne et al., 2005). In addition, they exhibit deficits in moral emotions such as indifference to situations that produce feelings of shame and embarrassment (Blair, 2005; Hare, 2003; Morrison and Gilbert, 2001), or lack of impulse control (Kiehl, 2006; Newman and Lorenz, 2003). Given the emotional problems that this population presents, several investigations have been devoted to studying the relationship between trait psychopathy and Emotional Intelligence (EI) in order to gain a better understanding of this disorder and develop more effective intervention programs for this population. The present study aimed to conduct a meta-analysis to clarify this relationship and resolve discrepancies across studies.

EI is defined as the ability to perceive, use, understand, and regulate emotions in one's self and others (Mayer et al., 2016). Joseph and Newman (2010) suggested that the construct of EI can be divided into three models, according to the type of measuring instruments employed and the conceptualization of EI: performance-based ability, self-report ability, and self-report mixed models. The performance-based ability model considers EI as a form of intelligence or mental ability based on emotional aptitudes that can be assessed in an objective manner through performance tests where participants have to solve problems with correct and incorrect responses (Mayer et al., 2000). The self-report ability model understands EI in the same way, but employs self-report instruments where there are no correct and incorrect responses and offers the participants' subjective perception. The self-report mixed model also employs subjective self-report tests, although it regards EI as a broader concept that includes mental abilities, personality factors, motivations, and interpersonal and intrapersonal skills (Mayer et al., 2008).

Research focusing on the relationship between trait psychopathy and EI has evaluated EI through the three aforementioned models. However, there is a general consensus that the performance-based ability model is the most appropriate, for several reasons. For instance, EI is understood as a mental ability (Mayer et al., 1999), and therefore it is necessary to use objective ability measures for its evaluation, in which the performance of the person is studied through a set of tasks and problems to solve (Mayer et al., 2008, 2016). This method of measuring EI is more similar to the way we assess cognitive skills and general intelligence. Self-reports do not adequately estimate mental abilities since they are based on subjective measures and present greater social desirability (Brackett et al., 2006; Webb et al., 2013). Moreover, it has been shown that performance-based ability EI instruments provide better divergent validity, and are more consistent in predicting general behaviour and performance in emotionally laden cognitive tasks than self-report models (Gutierrez-Cobo et al., 2016; Gutierrez-Cobo et al., 2017; Mayer et al, 2000; Mayer et al., 2016; Megías et al. 2017). Following these ideas, only investigations focused on the performance-based ability model were considered in the present study.

Studies exploring the relationship between the performance-based ability model of EI and trait psychopathy have shown conflicting results. Some studies have found a negative relationship between these two concepts, showing that higher psychopathic trait scores are related to lower EI levels (e.g., Ermer et al., 2012). However, other studies have found no such relationship (e.g., Zhang, 2015). To date, no meta-analysis has been carried out to clarify this issue. Our aim, therefore, was to conduct a meta-analysis to make a quantitative synthesis of all published studies that have examined the association between EI (measured as performance-based ability) and trait psychopathy, in order to address the incongruent results found in the literature.

2. Methods

The search strategy and meta-analysis were conducted according to Cochrane guidelines (Higgins and Green, 2011).

2.1 Search strategy and selection criteria

A systematic electronic literature search was carried out using Medline, Scopus, PsycINFO and PubMed to identify studies relating psychopathy and EI abilities, available up to May 2017. The search included the following terms: "emotional intelligence", "psychopath", "psychopathic" and “psychopathy”. Additionally, we checked reference lists of the articles found to ensure that no studies were overlooked. The search was limited to studies written in English and Spanish, and published in peer-reviewed journals. Thus, use of listservs or forums, and contact with other relevant authors to request additional studies were not necessary.

The inclusion criteria were: a) articles studying the relationship between psychopathic traits and EI measured by any performance-based ability instrument; b) studies providing a correlation coefficient value between psychopathic traits and EI. c) Studies that include participants with any level of trait psychopathy, any age group, and either gender. Exclusion criteria were: a) unpublished research; b) comments, editorials, master's theses, or dissertations; c) non-English or Spanish language publications.

Three evaluators (authors: A.M. expert in methodology, M.J.G.-C. expert in EI, and R.G.-L. expert in psychopathy) independently reviewed and selected studies according to predetermined selection criteria. The agreement between evaluators was perfect (kappa index =1.0). Sixty-four articles relating psychopathic traits to EI were identified. Following the inclusion criteria, eleven of them measured EI by a performance ability test, all of which indicated the statistical relationship through correlation

coefficients. Two of these articles (Jauk et al., [2016] and Visser et al., [2010]) ran separate analyses for sex (a joint analysis was not incorporated), and we thus treated them as different studies. Therefore, the final sample included in the meta-analysis consisted of 13 studies. Figure 1 shows the flow chart of the search strategy.

All the selected studies used MSCEIT as measuring instrument of performance-based EI, while psychopathy was assessed by five different instruments: The Psychopathy Checklist-Revised (PCL-R; Hare, 1991), The Psychopathic Personality Inventory Revised (PPI-R; Lilienfeld and Widows, 2005), Self-Report Psychopathy Scale (SRP; Paulhus et al., 2009), The Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995), and the Dark Triad Dirty Dozen (DTDD; Jonason and Webster, 2010).

For each study, we extracted the following information: the number of participants, the mean age of the sample, the percentage of men and women in the sample, the correlation coefficient, and the instrument used to measure EI and trait psychopathy (see Table 1).

- Insert Figure 1 here –

2.2 Statistical analysis

The meta-analysis was conducted using the Metafor package (Viechtbauer, 2010). The correlation coefficients (Pearson's r) extracted from studies meeting the inclusion criteria were used as the measure of effect size included in the meta-analysis. The heterogeneity of correlations across studies was assessed by the Cochran's Q statistic and I^2 statistic (Higgins and Thompson, 2002). Potential publication bias, i.e. the tendency to publish results that were statistically significant rather than non-significant, was assessed by visual funnel plot inspection, Egger's test, and Rosenthal's Fail-safe N test (Egger et al., 1997; Rosenthal, 1991).

3. Results

Thirteen studies were included in the meta-analysis based on the inclusion criteria. The whole sample comprised 2401 participants. The mean age was 26.6 years and 59.5% of the sample was men. Eight studies showed a significant negative correlation (alpha level at 0.05) between psychopathic traits and EI scores (n = 1655). On the other hand, five studies showed a non-significant correlation (n = 746). The main characteristics of each study are summarized in Table 1.

- Insert Table 1 here -

A random effects model was used to calculate the pooled correlation coefficient (95% CI) given the presence of heterogeneity in the sample (Cochran Q heterogeneity test: $Q = 48.64$, $p < 0.001$; I^2 statistic = 81.14%). Meta-analyses are usually based on studies that are not identical in their methods and sample characteristics, which introduce variability (heterogeneity) among the true effects. The random effects model allows control for between-study variability and thus permits the modeling of heterogeneity (Viechtbauer, 2010).

The meta-analysis of the pooled data revealed a significant negative association between psychopathy and EI (combined r = -0.21; 95% CI -0.30 -0.12; $p < 0.001$). Higher EI scores were related to a reduction in the psychopathy scores. Figure 2 presents a graphical overview of the results using a forest plot displaying the effect size data from the 13 studies examined in the meta-analysis.

- Insert Figure 2 here -

Publication bias was evaluated by funnel plot visual inspection, Egger's test, and Rosenthal's Fail-safe N test (Egger et al., 1997; Rosenthal, 1991). Funnel plot suggested a lack of publication bias showing a symmetrical distribution and a lower variability in

effect size with increasing sample size (see Figure 3). Similarly, Egger's test did not reveal evidence of a significant bias (p = 0.67). Rosenthal's Fail-safe N indicated that 528 missing studies with an effect size of zero would be needed to reduce the p value to a non-significant level (above 0.05). Therefore, publication bias was not present in this meta- analysis.

- Insert Figure 3 here –

Additionally, due to the presence of significant heterogeneity in the meta-analysis, we decided to study this effect in detail. A deeper inspection of the studies included in the meta-analysis revealed notable differences in the correlation coefficients of the studies using the PCL instrument (four studies) compared with those using other psychopathy instruments. When running the meta-analysis without studies employing the PCL, the results also revealed a significant negative relationship between trait psychopathy and EI (combined r = -0.28; 95% CI -0.34 -0.22; p < 0.001), but heterogeneity levels decreased considerably (Cochran Q heterogeneity test: Q = 15.74, p = 0.04; I2 statistic = 44.79%). On the other hand, separate meta-analyses removing each of the remaining individual psychopathy instruments, one at a time, showed a significant relationship between trait psychopathy and EI (all $p < 0.001$) and heterogeneity remained significant (all $p > 0.05$).

4. Discussion

The main objective of this study was to provide a reliable estimate of the relationship between psychopathic traits and EI. We carried out a quantitative and systematic review of the EI literature based on the Performance-Based Ability Model and psychopathy, in order to conduct a meta-analysis that could shed light on this issue.

Following the established inclusion and exclusion criteria (see Method section), thirteen studies were included in the meta-analysis, comprising a total sample of 2401 participants. In the final set of selected studies, psychopathy traits were assessed through five instruments (PCL-R, PPI-R, SRP, LSRP, DTDD), whereas EI -measured as performance-based ability- was always assessed by MSCEIT. The results of the meta-analysis revealed a significant negative correlation between EI and psychopathy ($r = -0.21$; $p < 0.001$), indicating that people who score higher on trait psychopathy have lower levels of EI, thereby demonstrating the relationship between both constructs.

Previous research has linked psychopathy to emotional deficits, such as a lack of impulse control (Kiehl, 2006; Newman and Lorenz, 2003), low empathy (Montagne et al., 2005), and deficits in moral expressions (Blair, 2005; Hare, 2003; Morrison and Gilbert, 2001). These findings have led to a growing interest in exploring whether psychopathic traits are related to EI. The literature has reported results that both support (Howe et al., 2014; Visser et al., 2010) and refute this relationship (Copestake et al., 2013; Curci et al., 2017b). Thus, our results make an important contribution to previous literature, confirming the existence of this association and showing that higher psychopathic trait scores are related to lower EI levels.

Interestingly, we observed that the strength of the trait psychopathy-EI relationship depends on the psychopathy assessment instrument chosen in each study. The heterogeneity showed in the meta-analysis was mainly due to the use of the PCL-R instrument, which presents notable differences in comparison with other psychopathy instruments (Copestake et al, 2013; Malterer, et al, 2010). PCL-R is one of the most popular instruments for measuring psychopathy, and was used in four of the thirteen studies included in the meta-analysis. PCL-R has been developed for use in forensic settings, requiring information that is not always available in non-forensic contexts. For

this reason, alternative measures such as the Psychopathy Personality Inventory are also used (PPI; Lilienfeld and Andrews, 1996). However, although both instruments are shown to measure psychopathy, they do not share the same operational definition of the construct, which can lead to different results depending on the instrument chosen (Copestake et al., 2013; Malterer et al., 2010). Thus, as a general recommendation for the assessment of psychopathy traits, it seems critical to take into account the possible differences between instruments.

The practical implications of the present study may be relevant. However, it must be taken into account that the magnitude of the association found between trait psychopathy and EI was moderate and most of the studies included in the meta-analysis used a non-clinical sample. Thus, we propose a set of possible applications, but more research would be necessary for their proper implementation. First, EI could be included, through performance-based ability instruments, as part of the assessment of individuals with psychopathic traits, since these two constructs were significantly related. Second, trait psychopathy prevention programs should consider the importance of improving EI. The application of these programs would be particularly relevant in children and adolescents, since trait psychopathy is a stable trait that allows for the prediction of possible future antisocial behaviours from early ages (Anderson et al., 1999; Loeber et al., 2009). Third, in the case of that future studies with clinical population continue to support the trait psychopathy-EI relationship, it would be of interest to carry out social and emotional learning programs with the objective of increasing emotional abilities, affective regulation, and impulsivity control of people with psychopathic traits in order to reduce their higher prevalence of recidivism in violent acts and criminal conduct (Castillo et al., 2013; Curci et al, 2017b; Hare, 2003; Nathanson et al. 2016). Finally, given the social-emotional deficits presented in this population, if we help these

individuals to develop their EI, we will stimulate the quality of their interpersonal relationships, facilitating their adaptation to society.

As has been discussed, our findings show a clear relationship between trait psychopathy and EI, which could play an important role in the prevention and treatment of problems related to psychopathic traits. Nevertheless, further research is needed to better understand and overcome a series of limitations that are inherent in the current literature. For example, Jauk et al. (2016) (one of the studies included in the meta-analysis) has showed a moderator effect of sex on the trait psychopathy-EI relationship. This relationship was significant for women ($p < 0.01$) but not for men ($p > 0.05$). The remaining studies of the meta-analysis did not report data on gender differences, or the samples were only composed of men, and thus it was not possible to analyse gender differences with our sample. It would therefore be of interest to open up new lines of research focusing on gender differences in order to deepen our understanding of this issue (Cabello, et al. 2016). In addition, although some of the studies included in the meta-analysis used a clinical sample (e.g., Curci et al, 2017a), most of these were focused on healthy populations in the absence of clinical evidence of a psychopathic disorder. Given the limited number of articles published to date, it was not possible to present the results according to different sample populations. Finally, future research should focus on the relationship between each of the four branches of the MSCEIT (perceiving emotions, facilitating thought, understanding emotions, and managing emotions) and trait psychopathy to obtain a more detailed multidimensional profile (e.g., Copestake et al, 2013).

In conclusion, this meta-analysis contributes toward a clearer and more integrative understanding of the relationship between EI ability and psychopathic traits. Through a review of all studies conducted to date, we find a significant negative correlation between

these two concepts and propose several future research lines and interesting clinical implications for the prevention, evaluation, and treatment of trait psychopathy by including EI factors in the traditional models of psychopathy.

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Table 1. Characteristics and correlation coefficient of the studies included in the meta-analysis

Study: First author (year)	Sample size	Mean age of the sample	Percentage of men in the sample	Type of population	Psychopathy instrument	EI instrument	Correlation coefficient (r)
Ermer et al. (2012)	374	34.2	100	Inmates	PCL-R	MSCEIT v2.0	-0.07
Vidal et al. (2010)	188	19.9	100	Undergraduate university students	PPI-R	MSCEIT v2.0	-0.21
Howe et al.(2014)	55	37.87	70	Employees of financial institutions	PPI-R	MSCEIT v2.0	-0.40
Lishner et al.(2011)	162	18.98	47.68	Undergraduate university students	SRP-III	MSCEIT v2.0	-0.34
Visser et al. (2010) *women sample	254	20.48	0	Undergraduate university students	SRP-III	MSCEIT v2.0	-0.30
Visser et al. (2010) *men sample	175	20.48	100	Undergraduate university students	SRP-III	MSCEIT v2.0	-0.40
Copestake et al. (2013)	57	38	100	Inmates	PCL-R	MSCEIT v2.0	0.06
Zhang et al. (2015)	396	15.82	46.36	Adolescents	LSRP	MSCEIT Chinese version	-0.23
Curci et al. (2017a)	26	30.04	100	Inmates	PPI-R	MSCEIT v2.0	-0.56
Curci et al. (2017b)	33	42.38	100	Inmates	PCL-R	MSCEIT v2.0	0.23
Jauk et al. (2016) *women sample	399	23.84	0	University students	DTDD	MSCEIT german version	-0.24
Jauk et al. (2016) *men sample	141	26.76	100	University students	DTDD	MSCEIT german version	-0.13
Kahn et al. (2016)	141	17.03	83.69	Incarcerated adolescents	PCL-YV	MSCEIT-YV-R	-0.02

* Analysis for Visser et al. (2010) and Jauk et al. (2016) were conducted separately for men and women in the original paper.

Figure captions.

Figure 1. Flow chart of the search process.

Figure 2. The forest plot illustrates the variation in correlation coefficients (and 95% confidence intervals) among all individual studies included in the meta-analysis. Box sizes represent the weight of each study in the meta-analysis.

Figure 3. Funnel plot assessing publication bias for studies included in meta-analysis. Correlation coefficients are shown on the horizontal axis and standard errors on the vertical axis. Vertical line represents the combined effect size estimate. The white area represents a pseudo confidence interval region around the effect size estimate with bounds equal to ±1.96 SE (see Sterne and Egger. 2001).

Figure 1.

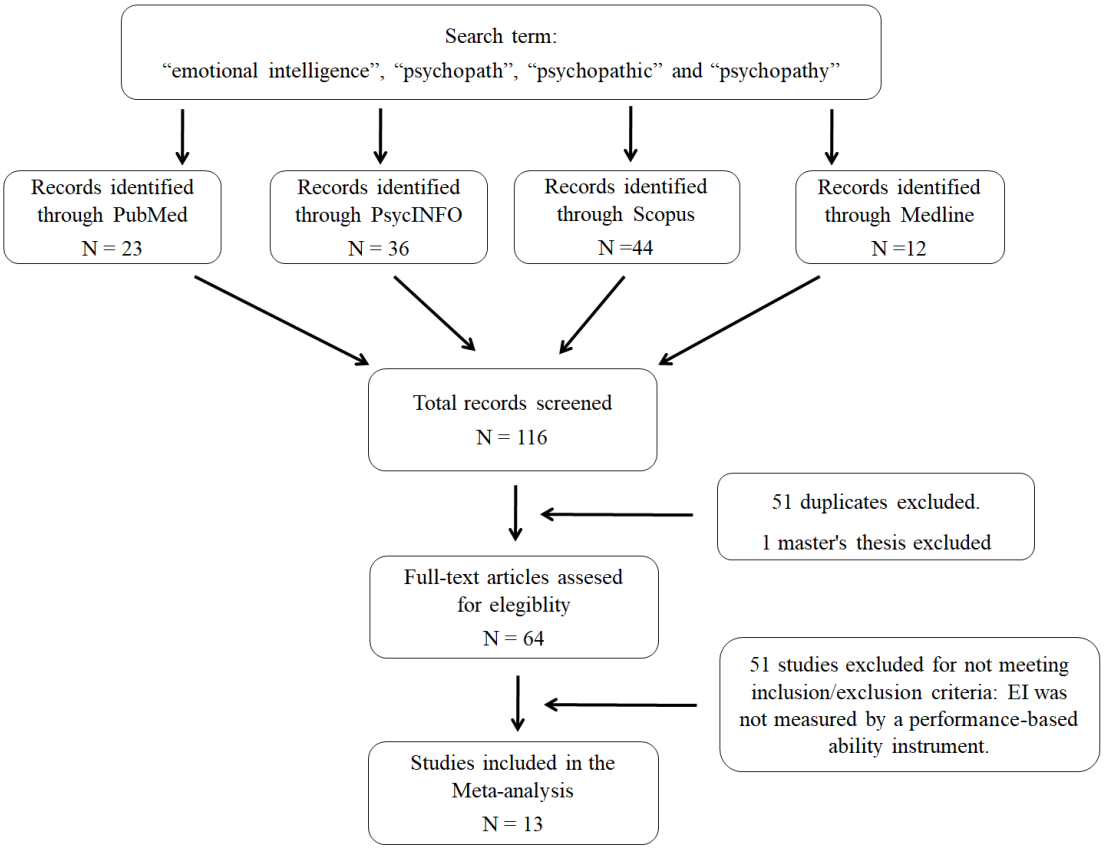

Search term:
"emotional intelligence", "psychopath", "psychopathic" and "psychopathy"
Records identified through PubMed N = 23
Records identified through PsycINFO N = 36
Records identified through Scopus N =44
Records identified through Medline N =12
Total records screened N = 116
51 duplicates excluded.
1 master's thesis excluded
Full-text articles assesed for elegiblity N = 64
51 studies excluded for not meeting inclusion/exclusion criteria: EI was not measured by a performance-based ability instrument.
Studies included in the Meta-analysis N = 13

Figure 2.

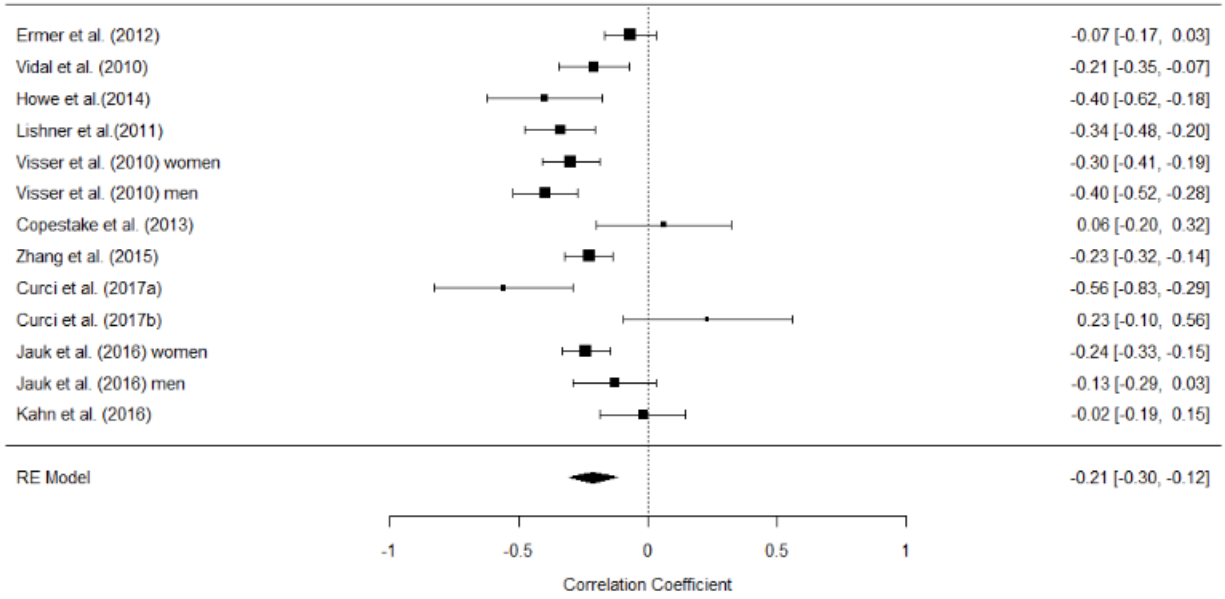
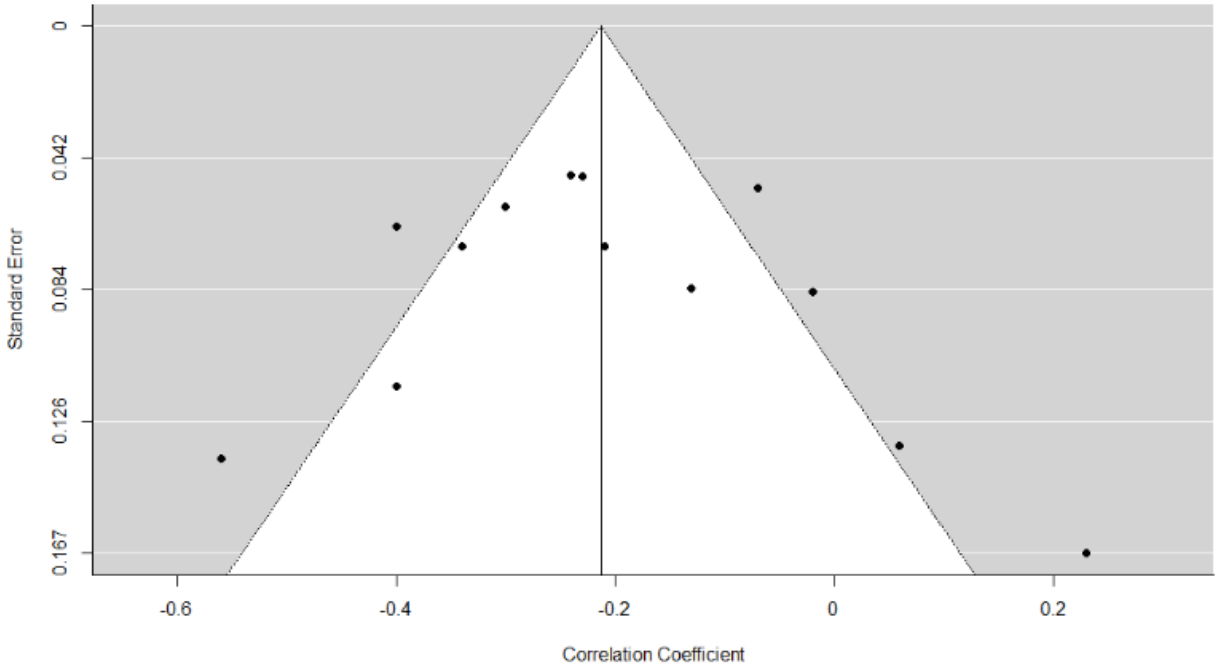

Ermer et al. (2012)
-0.07 [-0.17, 0.03]
Vidal et al. (2010)
-0.21 [-0.35, -0.07]
Howe et al.(2014)
-0.40 [-0.62, -0.18]
Lishner et al.(2011)
-0.34 [-0.48, -0.20]
Visser et al. (2010) women
-0.30 [-0.41, -0.19]
Visser et al. (2010) men
-0.40 [-0.52, -0.28]
Copestake et al. (2013)
0.06 [-0.20, 0.32]
Zhang et al. (2015)
-0.23 [-0.32, -0.14]
Curci et al. (2017a)
-0.56 [-0.83, -0.29]
Curci et al. (2017b)
0.23 [-0.10, 0.56]
Jauk et al. (2016) women
-0.24 [-0.33, -0.15]
Jauk et al. (2016) men
-0.13 [-0.29, 0.03]
Kahn et al. (2016)
-0.02 [-0.19, 0.15]
RE Model
-0.21 [-0.30, -0.12]
-1
-0.5
0
0.5
1
Correlation Coefficient

Figure 3.


Standard Error
0
0.042
0.084
0.126
0.167
-0.6
-0.4
-0.2
0
0.2
Correlation Coefficient