Available online at www.sciencedirect.com
ScienceDirect
Personality and Individual Differences 42 (2007) 921–933
PERSONALITY AND INDIVIDUAL DIFFERENCES
www.elsevier.com/locate/paid

A meta-analytic investigation of the relationship between emotional intelligence and health

Nicola S. Schutte *, John M. Malouff [1], Einar B. Thorsteinsson [1], Navjot Bhullar [1], Sally E. Rooke

School of Psychology, University of New England, Armidale, NSW 2351, Australia

Received 18 May 2006; received in revised form 17 August 2006; accepted 1 September 2006
Available online 11 October 2006

Abstract

A meta-analysis of 44 effect sizes based on the responses of 7898 participants found that higher emotional intelligence was associated with better health. Emotional intelligence had a weighted average association of $r = .29$ with mental health, $r = .31$ with psychosomatic health, and $r = .22$ with physical health. Emotional intelligence measured as a trait was more strongly associated with mental health than emotional intelligence measured as an ability. Comparison of three measures of perceived trait emotional intelligence, the EQ-i (Bar-On, 2000), the Assessing Emotions Scale (Schutte et al., 1998), and the Trait Meta Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), showed that the EQ-i had a significantly stronger association with mental health than the other measures. The findings provide a basis for research aimed at determining the causal relationship between trait emotional intelligence and health.

Keywords: Emotional intelligence; Health; Mental health; Meta-analysis

* Corresponding author. Tel.: +61 2 6773 3779.
E-mail address: nschutte@une.edu.au (N.S. Schutte).
[1] These three authors contributed equally to the research.

0191-8869/$ - see front matter © 2006 Elsevier Ltd. All rights reserved.
doi:10.1016/j.paid.2006.09.003

1. Introduction

Emotional intelligence consists of the interaction between emotion and cognition that leads to adaptive functioning (e.g., Salovey & Grewal, 2005). The four-branch model of emotional intelligence (Mayer, Salovey, & Caruso, 2004) posits that emotional intelligence involves the interrelated abilities of (a) perception of emotion in the self and others, (b) using emotion to facilitate decision making, (c) understanding emotion, and (d) regulating emotion in the self and others. Bar-On's (2000) mixed model proposes that emotional intelligence consists of emotional self-awareness as well as various skills or characteristics that may stem from the effective use or regulation of emotions, such as good interpersonal relationships, problem solving, and stress tolerance.

Mayer et al. (2004) argued that emotional intelligence is best conceived of as an ability, similar to cognitive intelligence. In line with this conceptualization they developed first the Multifactor Emotional Intelligence Scale (Mayer, Caruso, & Salovey, 1999) and then its successor, the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, Caruso, & Sitarenios, 2003), both maximal performance tests modelled after traditional cognitive intelligence tests.

Emotional intelligence has also been conceptualized as a trait (Neubauer & Freudenthaler, 2005; Petrides & Furnham, 2001), similar to personality characteristics such as extraversion or conscientiousness. A trait, or typical functioning, conceptualization and measurement of emotional intelligence can be applied to a mixed model definition of emotional intelligence such as the one proposed by Bar-On (2000), and operationalised through the EQ-i, to a narrower definition such as the one originally proposed by Salovey and Mayer (1990), operationalised through the Assessing Emotions measure developed by Schutte et al. (1998), or to aspects of this earlier Salovey and Mayer definition, operationalised through the Trait Meta Mood Scale (Salovey et al., 1995). Observer ratings, such as those provided by the Emotional Competency Inventory (Boyatzis, Goleman, & Rhee, 2000), as well as self-report measures have been used to assess trait emotional intelligence. It should be noted that developers of scales such as the EQ-i (Bar-On, 2000) do not necessarily describe their measures as trait measures, instead describing them as measures of skills or competencies.

Some research indicates that emotional intelligence may vary with age and gender. For example, Mayer et al. (1999) found that adults scored higher on an ability test of emotional intelligence than adolescents and that women have somewhat higher scores than men. Similarly, emotional intelligence assessed as a trait is higher for women (Goldenberg, Matheson, & Mantler, 2006; Schutte et al., 1998; Van Rooy, Alonso, & Viswesvaran, 2005) and may increase slightly with age (Van Rooy et al., 2005).

A meta-analysis of research published before 2003 found that emotional intelligence overlaps somewhat with both cognitive intelligence and aspects of personality, but also has substantial separate variance (Van Rooy & Viswesvaran, 2004). Further, this meta-analysis found the following predictive validity of emotional intelligence for various outcome realms: employment, .22; academic, .09; and other performance, .22.

These meta-analytic results indicate that overall emotional intelligence has promise as a predictor of various life outcomes. Mental and physical health was included with various other characteristics in the "other performance" category of the Van Rooy and Viswesvaran (2004)

meta-analysis. There is now a much more substantial body of research investigating the relationship between emotional intelligence and mental and physical health functioning, warranting meta-analytic investigation of this area of study.

The adaptive perception of emotion, use of emotion to enhance cognition, understanding of emotion, and regulation of emotion may contribute to mental and physical health in various ways. Matthews, Zeidner, and Roberts (2002) pointed out that level of emotional intelligence may have implications for both mental disorders in which emotion plays a central role as well as disorders that relate to non-emotional features of emotional intelligence. Mood and anxiety disorders are examples of disorders that have maladaptive emotional state as core symptoms (Matthews et al., 2002). The better perception, understanding, and management of emotion of those with higher emotional intelligence may prevent development of maladaptive emotional states associated with mood and anxiety disorders. Research has shown that those with higher emotional intelligence do tend to have typically more positive mood and are better able to repair mood after a negative mood induction (Schutte, Malouff, Simunek, Hollander, & McKenley, 2002).

Lack of awareness of emotion and inability to manage emotions are key symptoms in some personality disorders and impulse control disorders (Matthews et al., 2002). Supporting a link between lower emotional intelligence and lack of awareness of emotional processes as well as impulse control problems, Schutte et al. (1998) found that lower emotional intelligence is associated with more alexithymia and less impulse control.

Despite these grounds for predicting that higher emotional intelligence would be related to better mental health, under certain circumstances higher emotional intelligence may have maladaptive consequences. Petrides and Furnham (2003) found that individuals with higher emotional intelligence reacted more strongly to mood induction procedures, including a negative induction. Such greater sensitivity to mood-related stimuli might for some individuals lead to greater distress under adverse circumstances.

Matthews et al. (2002) pointed out that medical disorders, especially ones with psychosomatic aspects, are often co-morbid with mood or anxiety disorders. Higher emotional intelligence is linked with aspects of better psychosocial functioning (e.g., Brown & Schutte, 2006; Salovey & Grewal, 2005; Schutte et al., 1998; Schutte et al., 2001), including intrapersonal factors such as greater optimism and interpersonal factors such as better social relationships. Some of these psychosocial factors, such as more social support and more satisfaction with social support for those with higher emotional intelligence (Brown & Schutte, 2006), may serve as buffers to physical illness. Further, those with higher emotional intelligence might be better able to follow through on commitments to health behaviour and show better medical compliance.

The purpose of the present meta-analysis was to:

1. Obtain an estimate of the overall association between emotional intelligence and health for three types of health indicators: (a) physical, (b) mental, and (c) psychosomatic.
2. Examine potential moderating factors of this relationship such as (a) operationalisation of emotional intelligence as an ability versus as a trait, (b) type of trait measure (Assessing Emotions Scale, EQ-i, or Trait Meta Mood Scale), (c) gender of participants, (d) age of participants (adolescents or adults), and (e) whether the participants were students or community members.

2. Method

2.1. Literature search

We searched the PsycINFO and Pubmed databases from 28 February 2006 back to the earliest records for keywords (a) emotional intelligence or emotional competency, and (b) health, mental health and specific disorders terms. When an article did not have all the information needed for a meta-analysis, we wrote to the author listed for correspondence to obtain additional information. We also searched each relevant article as well as review articles and chapters focusing on emotional intelligence for references to other relevant articles.

2.2. Characteristics of included studies

A total of 35 studies were coded to produce 44 effect sizes based on 7898 participants. Participants' mean age ranged from 11 to 51 years. The studies were all published after 1995. For further details see Table 1.

2.3. Coding studies

The studies were coded for type of health assessed (mental, physical, or psychosomatic). Mental health indicators were those closely related to symptoms such as those involved in the core of disorders described in the Diagnostic and Statistical Manual-IV-TR (American Psychiatric Association, 2000), for instance measures of anxiety or depression. Physical health indicators were those that relate closely to physical (medical) health, e.g., limitations in physical functioning, physical symptom level, and pain. The psychosomatic health indicators had characteristics similar to both mental health and physical health, such as measures of chronic fatigue or scales that measure both mental and physical health. When there were multiple measures of one type of health category (e.g., multiple measures of mental health) reported in one study, to avoid biasing the results of the meta-analysis by drawing too many effect sizes from one sample, the effect sizes for these multiple measures were averaged and coded as one effect size for the meta-analysis.

The studies were also coded for the type of emotional intelligence measure used (ability, trait, or both ability and trait measures), and the type of trait emotional intelligence scale. Measures used in more than one study included the ability measure (test-like) MSCEIT (Mayer et al., 2003) and its predecessor, the MEIS (Mayer et al., 1999), and three self-report trait measures: Assessing Emotions Scale (Schutte et al., 1998), the EQ-i (Bar-On, 1997), and the Trait Meta Mood Scale (Salovey et al., 1995). The Trait Meta Mood Scale was designed to provide three component scores which are generally not combined. However, there is precedence for combining the three scales for a total emotional intelligence score (e.g., Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005; Warwick & Nettlebeck, 2004), and we averaged across scales for the present meta-analysis. Further, in two studies two different measures of emotional intelligence were used; to avoid biasing the results of the meta-analysis by drawing too many effect sizes from one sample, for these studies the effect sizes for the two measures of emotional intelligence were averaged and coded as one effect size. In Table 1 these two studies are coded as "multiple" for assessment

Table 1
Summary statistics for analysis of the relationship between emotional intelligence and health

Analysis	Assessment type	Assessment method[a]	Gender	Age group	Participants' profile	*N*	*r* ($CI_{-95\%}$, $CI_{+95\%}$)		
							Physical health	Mental health	Psychosomatic health
Austin et al. (2005)	Trait	Emotions	Both	Adult	Mixed[c]	115		.19 (.01, .36)	
Bastian et al. (2005)	Trait & Ability	Multiple	Both	Adult/Adol[b]	Students	246		.24 (.12, .35)	
Brackett and Mayer (2003)	Trait & Ability	Multiple	Both	Adult	Students	207		.09 (−.05, .22)	
Brackett et al. (2004)	Ability	MSCEIT	Both	Adult/Adol[b]	Students	302		.11 (.00, .22)	
Brown and Schutte (2006)	Trait	Emotions	Both	Adult	Students	167			.36 (.22, .49)
Ciarrochi et al. (2001)	Trait	Emotions	Both	Adolescent	Students	131		.43 (.28, .56)	
Ciarrochi et al. (2002)	Trait	Emotions	Both	Adult	Students	302		.15 (.04, .26)	
Dawda and Hart (2000)	Trait	EQ-i	Males	Adult/Adol[b]	Students	117		.57 (.43, .68)	.30 (.13, .46)
Dawda and Hart (2000)	Trait	EQ-i	Females	Adult/Adol[b]	Students	122		.62 (.50, .72)	.32 (.15, .47)
Day et al. (2005)	Trait	EQ-i	Both	Adult	Students	114			.43 (.27, .57)
Donaldson-Feilder and Bond (2004)	Trait	Trait Meta Mood	Both	Adult	Community	290	.16 (.05, .27)	.16 (.05, .27)	
Dulewicz et al. (2003)	Trait	EIQ	Both	Adult	Community	59		.46 (.23, .64)	
Extremera and Fernández-Berrocal (2002)	Trait	Trait Meta Mood	Females	Adult	Students	99	.02 (−.18, .22)	.23 (.03, .41)	.20 (.00, .38)
Extremera and Fernández-Berrocal (2005)	Trait	Trait Meta Mood	Both	Adult	Students	161		.05 (−.11, .20)	
Fernández-Berrocal et al. (2004)	Trait	Trait Meta Mood	Both	Adult	Students	292		.12 (.01, .23)	
Ghorbani et al. (2002)	Trait	Trait Meta Mood	Both	Adult	Students	451		.32 (.23, .40)	
Gohm et al. (2005)	Ability	MSCEIT	Both	Adult	Students	158		.08 (−.08, .23)	
Goldman et al. (1996)	Trait	Trait Meta Mood	Both	Adult	Students	134	.10 (−.07, .27)	.15 (−.02, .31)	
Hemmati et al. (2004)	Trait	EQ-i	Males	Adult	Prisoners	119		.61 (.48, .71)	
Humpel et al. (2001)	Ability	MEIS subscale	Both	Adolescent	Community	43		.01 (−.29, .31)	
Jain and Sinha (2005)	Trait	EQ-i	Males	Adult	Community	250		.25 (.13, .36)	
Leible and Snell (2004)	Trait	Trait Meta Mood	Both	Adult	Students	1,418		.21 (.16, .26)	
Martinez-Pons (1999–2000)	Trait	EISRS	Both	Adult	Community	100		.36 (.18, .52)	
Martinez-Pons (1997–1998)	Trait	Trait Meta Mood	Both	Adult	Community	108		.64 (.51, .74)	
Ogińska-Bulik (2005)	Trait	Emotions	Both	Adult	Community	330		.16 (.05, .26)	
Pau and Croucher (2003)	Trait	Emotions	Both	Adult	Students	213		.29 (.16, .41)	
Riley and Schutte (2003)	Trait	Emotions	Both	Adult	Mixed[c]	141		.38 (.23, .51)	
Saklofske et al. (2003)	Trait	Emotions	Both	Adult	Students	354		.38 (.29, .47)	
Salovey et al. (2002)	Trait	Trait Meta Mood	Both	Adult/Adol[b]	Students	104		.23 (.04, .40)	.23 (.04, .40)
Schmidt and Andrykowski (2004)	Trait	Trait Meta Mood	Females	Adult	Community	210		.35 (.23, .46)	

(*continued on next page*)

Table 1 (*continued*)

Analysis	Assessment type	Assessment method[a]	Gender	Age group	Participants' profile	*N*	*r* ($CI_{-95\%}$, $CI_{+95\%}$)		
							Physical health	Mental health	Psychosomatic health
Schutte et al. (1998)	Trait	Emotions	Both	Adult	Mixed[c]	38		.37 (.06, .62)	
Slaski and Cartwright (2002)	Trait	EQ-i	Both	Adult	Community	221		.49 (.38, .58)	
Trinidad and Johnson (2002)	Ability	MEIS	Both	Adolescent	Students	205		.19 (.05, .32)	
Tsaousis and Nikolaou (2005)	Trait	Trait Meta Mood	Both	Adult	Mixed[c]	365	.32 (.22, .41)	.43 (.34, .51)	
Tsaousis and Nikolaou (2005)	Trait	Trait Meta Mood	Both	Adult	Community	212	.44 (.32, .54)	.29 (.16, .41)	

[a] Emotions = Assessing Emotions Scale (Schutte et al., 1998); EQ-i (Bar-On, 1997); MSCEIT (Mayer et al., 2003); Trait Meta Mood = Trait Meta Mood Scale (Salovey et al., 1995); EIQ (Dulewicz & Higgs, 2000); EISRS (Martinez-Pons, 1999–2000); MEIS (Mayer et al., 1999).

[b] Adult/Adol = both adults and adolescents as participants.

[c] Mixed = students and community members as participants.

Table 2
Meta-analysis summary statistics for the relationship between emotional intelligence and health indicators

Health indicator	N_r	r ($CI_{-95\%}$, $CI_{+95\%}$), SE	z	p	Homogeneity analysis	Fail-safe N[a]
Physical	5	.22 (.08, .36), 0.070	3.13	.002	$Q(4) = 19.66$, $p < .001$	11
Mental	33	.29 (.23, .34), 0.026	10.97	<.001	$Q(32) = 144.78$, $p < .001$	104
Psychosomatic	6	.31 (.24, .39), 0.038	8.34	<.001	$Q(5) = 3.83$, $p = .575$	21

Note: Effect sizes were weighted by sample size. A significant Q value indicates that homogeneity should be rejected.
[a] Reports the number of studies with $r = .00$ needed to reduce the mean r to the r criterion value (±.07).

method. Finally, studies were coded for gender of participants (male, female, and mixed) and for age (adolescents, adults, and mixed-age groups).

Two raters independently coded each of the studies. In the few instances in which the coding of a variable by the two raters was not in agreement, discussion between the authors resulted in a consensus for the coding.

2.4. Statistical analysis

The meta-analysis used r for the effect size. Inverse variance weighting (w) following equations recommended by Lipsey and Wilson (2001) was employed to compute descriptive and inferential statistics. Homogeneity analysis was performed using the Q statistic (Lipsey & Wilson, 2001). The effect sizes for the factors were examined for univariate outliers (criterion $z = 3.30$, $p = .001$) and multivariate outliers (Mahalanobis distance using criterion $\chi^2(5) = 20.52$, $p = .001$), following the recommendations of Tabachnick and Fidell (2001). No effect sizes were identified as potential univariate outliers. When effect sizes are heterogeneous, random effects models should be employed for analyses; this produces larger confidence intervals than fixed effects models, leading to more conservative conclusions (Lipsey & Wilson, 2001). As Table 2 indicates, the effect sizes tended to be heterogeneous, so we used random effects models for all meta-analytic analyses.

3. Results

Table 1 shows the effect size for each effect size analysis. Every effect size was in the direction of an association between emotional intelligence and good health. Table 2 reports the meta-analytic relationship between emotional intelligence and the three types of health indicators. The results show that mental, physical, and psychosomatic health all had medium effect sizes, with r ranging from .22 to .31, indicating that on average emotional intelligence explained between 5% and 9% of the variance in health.

The homogeneity analysis in Table 2 indicates that the effect sizes for physical and mental health tended to be heterogeneous, suggesting that moderators might exist. Table 3 reports the results of an examination of five potential moderating factors. Method of assessing emotional intelligence (ability versus trait) was a significant moderator, with trait measures showing a significantly higher correlation with mental health. The association between emotional intelligence measured as an ability and mental health was nonsignificant. There were not enough study results available to make this comparison with regard to physical health or psychosomatic health.

Table 3
Moderator analysis for the emotional intelligence health indicator relationship, mixed effects model (method of moments random effects) analysis

Health indicator	Homogeneity Analysis			Trait	Ability	Trait & Ability
	$Q_{between}$	df	p	r ($CI_{-95\%}$, $CI_{+95\%}$), SE, N	R ($CI_{-95\%}$, $CI_{+95\%}$), SE, N	r ($CI_{-95\%}$, $CI_{+95\%}$), SE, N
Physical	NA					
Mental	8.51	2	.014	.32 (.26, .37), 0.028, 27	.11 (−.03, .26), 0.074, 4	.17 (−.02, .36), 0.097, 2
Psychosomatic	NA					
				EQ-i	Assessing Emotions Scale	Trait Meta Mood Scale
Physical	NA					
Mental	10.74	2	.005	.49 (.37, .62), 0.062, 5	.28 (.18, .38), 0.049, 8	.26 (.19, .34), 0.038, 12
Psychosomatic	2.23	1	.135	.35 (.24, .45), 0.054, 3	NA	.22 (.08, .36), 0.071, 2
				Males	Females	Mixed
Physical	1.84	1	.175	NA	.02 (−.30, .34), 0.162, 1	.26 (.12, .40), 0.071, 4
Mental	7.48	2	.024	.46 (.30, .62), 0.084, 3	.40 (.23, .57), 0.085, 3	.25 (.20, .31), 0.027, 27
Psychosomatic	0.89	2	.642	.30 (.12, .48), 0.094, 1	.27 (.13, .40), 0.068, 2	.35 (.24, .45), 0.052, 3
				Adolescents	Adults	Mixed
Physical	NA					
Mental	0.87	2	.646	.24 (.05, .43), 0.096, 3	.28 (.22, .34), 0.030, 25	.34 (.20, .47), 0.069, 5
Psychosomatic	0.50	1	.478	NA	.34 (.24, .44), 0.052, 3	.29 (.18, .39), 0.055, 3
				Students	General community	Mixed
Physical	1.92	2	.166	.06 (−.18, .31), 0.125, 2	.30 (.07, .52), 0.115, 2	NA
Mental	2.80	2	.247	.24 (.18, .31), 0.032, 18	.32 (.23, .41), 0.046, 10	.35 (.20, .49), 0.075, 4
Psychosomatic	NA					

Note: Effect sizes were weighted by sample size. There was a limited ability to conduct moderator analysis for physical and psychosomatic health data sub-sets due to the small number of studies in these areas. Homogeneity was assessed for each factor level. The homogeneity assumption held for all levels on all factors for all indicators ($p > .05$).

Evaluation of different trait emotional intelligence instruments showed significantly higher effect sizes for the EQ-i with mental health and psychosomatic health than the Trait Meta Mood State Scale and the Assessing Emotions Scale, except for a slight overlap in effect sizes for the EQ-i and the Assessing Emotions Scale with regard to mental health. There was also a significant moderating effect for gender on the relationship between emotional intelligence and mental health, with the highest effect sizes reported in studies that used just males or just females, compared to studies with both males and females. Age group did not moderate the relationship between emotional intelligence and health, and neither did whether the participants were students nor community members.

4. Discussion

A meta-analysis of 44 effect sizes based on the responses of 7898 participants found that higher emotional intelligence was significantly associated with better health. Notably, the 33 effect sizes

for the relationship between emotional intelligence and mental health showed a weighted average association of $r = .29$, indicating shared variance between the two variables. Although the methodologies of the meta-analysis and the studies on which it is based do not provide evidence regarding causality, it may be that the better perception, understanding, and management of emotion of individuals with higher emotional intelligence make it less likely that they will experience mental health problems. Future research might profitably investigate the efficacy of interventions aimed at increasing components of emotional intelligence in improving mental health.

The six effect sizes for health outcomes with a strong psychosomatic component, such as fatigue, showed a weighted average association of $r = .31$, similar to the effect size for mental health. This association might in part be due to the relationship between lower emotional intelligence and poorer psychosocial functioning that may make individuals more susceptible to psychosomatic symptoms. Additionally, components of emotional intelligence, such as management of emotions, may have direct impact on the experiencing of symptoms. Future research might further investigate the links between emotional functioning, mediating and moderating factors, and the experience of psychosomatic symptoms.

The five effect sizes for the relationship between emotional intelligence and physical health showed a significant weighted average association of $r = .22$. This effect size was significantly lower than the effect sizes for mental health and psychosomatic health, perhaps reflecting the relative importance of other causal factors in physical health.

The effect sizes for the relationship between emotional intelligence and three types of health found in the present meta-analytic investigation compare favourably to the association of .20 between emotional intelligence and a variety of outcomes, including work and academic performance, reported by Van Rooy and Viswesvaran (2004). The overall medium effect sizes for the association between emotional intelligence and mental and psychosomatic health is comparable to the relationship between the Big Five Personality Dimensions and symptoms of psychopathology reported in a meta-analysis by Malouff, Thorsteinsson, and Schutte (2005). That meta-analysis showed that Neuroticism had a large effect size, Conscientiousness had a medium effect size, Extraversion and Agreeableness had small effect sizes, and Openness was not significantly associated with symptoms of psychopathology. However, a substantial amount of variance in psychopathology symptoms was not accounted for by the Big Five dimensions. As Van Rooy and Viswesvaran (2004) reported only small to medium associations between emotional intelligence and the Big Five personality dimensions, it may be that emotional intelligence has useful additional predictive information over and above the Big Five Dimensions for mental health functioning. Future research might explore this issue further and might examine possible mediating effects of personality.

The present study allowed meta-analytic comparisons between alternative conceptualizations and measurements of emotional intelligence. Emotional intelligence measured as an individual's typical or trait performance, and assessed through self-report of perceived functioning, was more strongly associated with mental health than emotional intelligence conceptualized as an ability and assessed through a performance measure. Two studies included in the analysis provided a side-by-side comparison of ability and trait measures, and those results are worthy of mention. One study found very similar correlations (associations from $-.22$ to $-.25$) between anxiety and three measures of emotional intelligence, including one ability measure – the MSCEIT, and two trait measures – the Trait Meta Mood Scale and the Assessing Emotions Scale (Bastian,

Burns, & Nettelbeck, 2005). The other study found substantially higher correlations (ranging from −.13 to −.24) between measures of drug, alcohol, and cigarette use and the EQ-i than between those measures of substance use and either the MSCEIT or the Assessing Emotions Scale (with *r*s ranging from .01 to −.06; Brackett & Mayer, 2003). The findings of the Bracket and Mayer study are consistent with the results of the meta-analysis in that the EQ-i showed a higher correlation with mental health problems than the other emotional intelligence measures. The findings of the Bastian et al. (2005) study are inconsistent with the meta-analysis results to the extent that the ability measure of emotional intelligence correlated as highly with mental health problems as two self-report measures.

The meta-analytic difference between ability and trait measures may in part be due to characteristic emotional intelligence having more relevance to mental health functioning than emotional intelligence ability, which may be latent. An alternative explanation of this finding is that it may be in part due to common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) in that measures of perceived trait emotional intelligence and mental health were all based on self-report. Yet another possibility is that the MSCEIT does not fully measure the domain of emotional intelligence, as argued by Brody (2004). Future research might use multi-method approaches to further examine the relationship between trait emotional intelligence and mental health. Possibilities include examining the association between scores on the observer-rating version of the Emotional Competency Inventory (Boyatzis et al., 2000) and self-reported mental health symptoms or relating scores from one of the self-report measures of emotional intelligence to clinician or observer ratings of mental health.

Three measures of perceived trait emotional intelligence, the EQ-i (Bar-On, 2000), the Assessing Emotions Scale (Schutte et al., 1998), and the Trait Meta Mood Scale (Salovey et al., 1995), were each used in several studies relating emotional intelligence to mental health outcomes, allowing a meta-analytic comparison of these trait scales. With an average effect size of .49, the EQ-i had a significantly stronger association with mental health than the other measures. The EQ-i is based on a broader conceptualization of emotional intelligence than the other two trait scales, including characteristics such as good interpersonal relationships and stress tolerance (Bar-On, 2000), and in this respect may be described as a measure of general adaptation, which is to some extent the opposite of psychopathology. As the sampling domains of the EQ-i and mental health measures are similar, it follows that EQ-i scores might show a stronger relationship with mental health.

The relatively small number of studies examining physical and psychosomatic health did not allow certain analyses. For example, presently there are not enough studies focusing on the relationship between emotional intelligence and physical health or psychosomatic health to allow meta-analytic examination of the moderating role of type of conceptualization and measurement of emotional intelligence. Future research examining the relationship between emotional intelligence and physical and psychosomatic health, using a broad array of emotional intelligence conceptualizations and measurements, might address this lack.

The great majority of studies comprising the meta-analysis reported results for mixed groups of women and men. However, several studies reported results separately for men and women. There is no obvious possible explanation for the finding of significantly larger effect sizes for male or female only groups. The differences might be due to gender mixing serving as a suppressor variable or to unknown qualities of the populations from which the single-gender groups were recruited.

The current meta-analysis indicates that overall there are significant relationships between emotional intelligence and mental health, psychosomatic health, and physical health. Through intervention studies, longitudinal designs, and model testing, future prevention and intervention research might shed further light on the direct and indirect relationships between emotional intelligence and health. Connected to such efforts is the potential of discovering additional avenues for helping individuals who are experiencing health problems.

References

References marked with an asterisk indicate studies included in the meta-analysis

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders – text revision* (4th ed.). Washington, DC: Author.

*Austin, E. J., Saklofske, D. H., & Egan, V. (2005). Personality, well-being and health correlates of trait emotional intelligence. *Personality and Individual Differences, 38*, 547–558.

Bar-On, R. (1997). *Emotional quotient inventory: technical manual*. Toronto: Multi-Health Systems.

Bar-On, R. (2000). Emotional and social intelligence: insights from the emotional quotient inventory. In R. Bar-On & J. D. A. Parker (Eds.), *The handbook of emotional intelligence* (pp. 363–388). San Francisco: Jossey-Bass.

*Bastian, V. A., Burns, N. R., & Nettelbeck, T. (2005). Emotional intelligence predicts life skills, but not as well as personality and cognitive abilities. *Personality and Individual Differences, 39*, 1135–1145.

Boyatzis, R. E., Goleman, D., & Rhee, K. (2000). Clustering competence in emotional intelligence: insights from the emotional competence inventory. In R. Bar-On & J. D. A. Parker (Eds.), *Handbook of emotional intelligence* (pp. 343–362). San Fransisco: Jossey-Bass.

*Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin, 29*, 1147–1158.

*Brackett, M. A., Mayer, J. D., & Warner, R. M. (2004). Emotional intelligence and its relation to everyday behaviour. *Personality and Individual Differences, 36*, 1387–1402.

Brody, N. (2004). What cognitive intelligence is and what emotional intelligence is not. *Psychological Inquiry, 15*, 234–238.

*Brown, R. F., & Schutte, N. S. (2006). Direct and indirect relationships between emotional intelligence and subjective fatigue in university students. *Journal of Psychosomatic Research, 60*, 585–593.

*Ciarrochi, J., Chan, A. Y. C., & Bajgar, J. (2001). Measuring emotional intelligence in adolescents. *Personality and Individual Differences, 31*, 1105–1119.

*Ciarrochi, J., Deane, F. P., & Anderson, S. (2002). Emotional intelligence moderates the relationship between stress and mental health. *Personality and Individual Differences, 32*, 197–209.

*Dawda, D., & Hart, S. D. (2000). Assessing emotional intelligence: reliability and validity of the Bar-On emotional quotient inventory (EQ-i) in university students. *Personality and Individual Differences, 28*, 797–812.

*Day, A. L., Therrien, D. L., & Carroll, S. A. (2005). Predicting psychological health: assessing the incremental validity of emotional intelligence beyond personality, type A behaviour, and daily hassles. *European Journal of Personality, 19*, 519–536.

*Donaldson-Feilder, E. J., & Bond, F. W. (2004). The relative importance of psychological acceptance and emotional intelligence to workplace well-being. *British Journal of Guidance & Counselling, 32*, 187–203.

Dulewicz, V., & Higgs, M. J. (2000). *EIQ-Managerial User Guide*. Windsor, UK: NFER-Nelson.

*Dulewicz, V., Higgs, M., & Slaski, M. (2003). Measuring emotional intelligence: content, construct and criterion-related validity. *Journal of Managerial Psychology, 18*, 405–420.

*Extremera, N., & Fernández-Berrocal, P. (2002). Relation of perceived emotional intelligence and health-related quality of life of middle-aged women. *Psychological Reports, 91*, 47–59.

*Extremera, N., & Fernández-Berrocal, P. (2005). Perceived emotional intelligence and life satisfaction: predictive and incremental validity using the trait meta-mood scale. *Personality and Individual Differences, 39*, 937–948.

*Fernádez-Berrocal, P., Extremera, N., & Ramos, N. (2004). Validity and reliability of the Spanish modified version of the trait meta-mood scale. *Psychological Reports, 94*, 751–755.

*Ghorbani, N., Bing, M. N., Watson, P. J., Davison, H. K., & Mack, D. A. (2002). Self-reported emotional intelligence: construct similarity and functional dissimilarity of higher order processing in Iran and the United States. *International Journal of Psychology, 37*, 297–308.

*Gohm, C. L., Corser, G. C., & Dalsky, D. J. (2005). Emotional intelligence under stress: useful, unnecessary, or irrelevant? *Personality and Individual Differences, 39*, 1017–1028.

Goldenberg, I., Matheson, K., & Mantler, J. (2006). The assessment of emotional intelligence: a comparison of performance-based and self-report methodologies. *Journal of Personality Assessment, 86*, 33–45.

*Goldman, S. L., Kramer, D. T., & Salovey, P. (1996). Beliefs about mood moderate the relationship of stress to illness and symptom reporting. *Journal of Psychosomatic Research, 41*, 115–128.

*Hemmati, T., Mills, J. F., & Kroner, D. G. (2004). The validity of the Bar-On emotional intelligence quotient in an offender population. *Personality and Individual Differences, 37*, 695–706.

*Humpel, N., Caputi, P., & Martin, C. (2001). The relationship between emotions and stress among mental health nurses. *Australian and New Zealand Journal of Mental Health Nursing, 10*, 55–60.

*Jain, A. K., & Sinha, A. K. (2005). General health in organizations: relative relevance of emotional intelligence, trust, and organizational support. *International Journal of Stress Management, 12*, 257–273.

*Leible, T. L., & Snell, W. E. (2004). Borderline personality disorder and multiple aspects of emotional intelligence. *Personality and Individual Differences, 37*, 393–404.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, USA: Sage Publications.

Lumley, M. A., Gustavson, B. J., Partridge, R. T., & Labouvie-Vief, G. (2005). Assessing alexithymia and related emotional ability constructs using multiple methods: interrelationships among measures. *Emotion, 5*, 329–342.

Malouff, J. M., Thorsteinsson, E., & Schutte, N. S. (2005). The relationship between the five-factor model of personality and clinical disorders: a meta-analysis. *Journal of Psychopathology and Behavioral Assessment, 27*, 101–114.

*Martinez-Pons, M. (1997–1998). The relation of emotional intelligence with selected areas of personal functioning. *Imagination, Cognition and Personality, 17*, 3–13.

*Martinez-Pons, M. (1999–2000). Emotional intelligence as a self-regulatory process: a social cognitive view. *Imagination, Cognition and Personality, 19*, 331–350.

Matthews, G., Zeidner, M., & Roberts, R. D. (2002). *Emotional intelligence: science and myth*. Cambridge, MA: MIT Press.

Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence, 27*, 267–298.

Mayer, J. D., Salovey, P., & Caruso, D. (2004). Emotional intelligence: theory, findings, and implications. *Psychological Inquiry, 15*, 197–215.

Mayer, J. D., Salovey, P., Caruso, D., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion, 3*, 97–105.

Neubauer, A. C., & Freudenthaler, H. H. (2005). Models of emotional intelligence. In R. Schultz & R. D. Roberts (Eds.), *Emotional intelligence: an international handbook* (pp. 31–50). Cambridge, MA: Hogrefe.

*Ogińska-Bulik, N. (2005). Emotional intelligence in the workplace: exploring its effects on occupational stress and health outcomes in human service workers. *International Journal of Occupational Medicine and Environmental Health, 18*, 167–175.

*Pau, A. K. H., & Croucher, R. (2003). Emotional intelligence and perceived stress in dental undergraduates. *Journal of Dental Education, 67*, 1023–1028.

Petrides, K. V., & Furnham, A. (2001). Trait emotional intelligence: psychometric investigation with reference to established trait taxonomies. *European Journal of Personality, 15*, 425–448.

Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality, 17*, 39–57.

Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879–903.

*Riley, H., & Schutte, N. (2003). Low emotional intelligence as a predictor of substance-use problems. *Journal of Drug Education, 33*, 391–398.

*Saklofske, D. H., Austin, E. J., & Minski, P. S. (2003). Factor structure and validity of a trait emotional intelligence measure. *Personality and Individual Differences, 34*, 707–721.

Salovey, P., & Grewal, D. (2005). The science of emotional intelligence. *Current Directions in Psychological Science, 14*, 281–285.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9*, 185–211.

Salovey, P., Mayer, J. D., Goldman, S., Turvey, C., & Palfai, T. (1995). Emotional attention, clarity, and repair: exploring emotional intelligence using the trait meta-mood scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125–154). Washington, DC: American Psychological Association.

*Salovey, P., Stroud, L. R., Woolery, A., & Epel, E. S. (2002). Perceived emotional intelligence, stress reactivity, and symptom reports: further explorations using the trait meta-mood scale. *Psychology and Health, 17*, 611–627.

*Schmidt, J. E., & Andrykowski, M. A. (2004). The role of social and dispositional variables associated with emotional processing in adjustment to breast cancer: an internet-based study. *Health Psychology, 23*, 259–266.

Schutte, N. S., Malouff, J. M., Bobik, C., Conston, T., Greeson, C., Jedlicka, C., et al. (2001). Emotional intelligence and interpersonal relations. *Journal of Social Psychology, 141*, 523–536.

*Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., et al. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*, 167–177.

Schutte, N. S., Malouff, J. M., Simunek, M., Hollander, S., & McKenley, J. (2002). Characteristic emotional intelligence and emotional well-being. *Cognition and Emotion, 16*, 769–786.

*Slaski, M., & Cartwright, S. (2002). Health, performance and emotional intelligence: an exploratory study of retail managers. *Stress and Health, 18*, 63–68.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.

*Trinidad, D. R., & Johnson, C. A. (2002). The association between emotional intelligence and early adolescent tobacco and alcohol use. *Personality and Individual Differences, 32*, 95–105.

*Tsaousis, I., & Nikolaou, I. (2005). Exploring the relationship of emotional intelligence with physical and psychological health functioning. *Stress and Health, 21*, 77–86.

Van Rooy, D. L., Alonso, A., & Viswesvaran, C. (2005). Group differences in emotional intelligence scores: theoretical and practical implications. *Personality and Individual Differences, 38*, 689–700.

Van Rooy, D. L., & Viswesvaran, C. (2004). Emotional intelligence: a meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior, 65*, 71–95.

Warwick, J., & Nettlebeck, T. (2004). Emotional intelligence is ...? *Personality and Individual Differences, 37*, 1091–1100.