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Review

Emotional intelligence and attachment in adulthood: A meta-analysis☆

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ABSTRACT

Attachment styles form during childhood emotional experiences. These experiences may be shaped by emotion-related traits such as how children interpret and regulate their own and others' emotions. These emotion-related traits appear in many emotional intelligence (EI) models, such that EI may relate to attachment styles. We conduct a meta-analysis to estimate the association between EI and attachment styles (26 studies, $N = 6914$). We include only non-clinical adult samples and validated psychometric assessments. We examine EI type as a moderator, comparing ability EI versus EI rating-scales using subgroups analysis and meta-regression. We find that lower anxious attachment is significantly associated with EI rating-scales ($r = -0.25$, $k = 26$) and ability EI ($r = -0.16$, $k = 45$), lower avoidant attachment is significantly associated with EI rating-scales ($r = -0.36$, $k = 21$) and ability EI ($r = -0.21$, $k = 40$), but secure attachment is significantly associated with EI rating-scales only ($r = 0.31$, $k = 30$). EI type significantly moderated the EI/avoidant attachment association only ($\beta = -0.14$, $p = .01$). We discuss possible mechanisms by which EI could influence early development of attachment styles (and vice-versa) while acknowledging that the causal direction underlying EI/attachment associations is unclear.

1. Introduction

Attachment theory describes how enduring beliefs and tendencies around interpersonal relationships develop in infant-caregiver interactions and transfer to other interpersonal relationships (Fraley & Shaver, 2021). These enduring traits are known as attachment styles and are broadly defined as secure attachment versus various forms of insecure attachment (e.g., anxious, avoidant, dismissive, preoccupied, etc.). Adult attachment is thought to be influenced by childhood experiences and events, such that attachment styles are relatively stable over the adult lifespan (Bowlby, 1982; Collins & Read, 1990; Fraley & Shaver, 2021). Adult attachment is related to intrapersonal and interpersonal factors, including personality traits, emotional capacities, affect regulation, and the attitudes, beliefs, and expectations of others (Fraley & Shaver, 2021; Kobak & Sceery, 1988; Shaver & Brennan, 1992; Wearden, Peters, Berry, Barrowclough, & Liversidge, 2008). Many of these factors underpin modern models of emotional intelligence (EI), such that there is a clear conceptual link between higher EI and adult attachment styles. To establish whether this conceptual link is substantiated by empirical relationships, below we outline a meta-analysis of the relationship between EI and attachment styles. In doing so, we consider the two different ways of measuring EI (ability scales and rating scales) and multiple different attachment styles (e.g., secure, anxious, avoidant, dismissive, preoccupied). Our goal is to establish which attachment styles are related to the emotional competencies of trait and ability EI, respectively.

1.1. Emotional intelligence

While there are multiple EI models, these can be broadly bifurcated by the type of measurement technique used. Ability scales (*ability EI*) capture EI as a cognitive ability construct using maximum-performance test items that require information processing or knowledge. Rating scales capture EI as a personality construct. EI rating scales are commonly known as *trait EI* after the dominant measurement tool and conceptual model (the Trait Emotional Intelligence Questionnaire, or TEIQue, Petrides, 2010). While both ability scales and rating scales share the standard label 'emotional intelligence,' they assess very different constructs. Ability EI test scores show moderate correlations with general intelligence and small to moderate correlations with

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personality, whereas self-ratings of EI show large associations with personality traits, notably lower neuroticism and higher extraversion (Joseph & Newman, 2010; Olderbak, Semmler, & Doebler, 2019; van der Linden et al., 2017). Ability scales and rating scales of EI are only modestly related to each other (e.g., meta-analytic correlations of 0.12 to 0.26; Joseph & Newman, 2010).

Ability EI involves processing and manipulating emotional information—it is defined as the ability to perceive, use, understand, and manage emotions (MacCann et al., 2020; Mayer, Caruso, & Salovey, 2016). These four core abilities (perceiving emotions, using emotions, understanding emotions, and managing emotions) are known as branches of EI, and the theoretical model of ability EI is often referred to as the Four-Branch Model. Ability EI is measured using objective test items such as asking test-takers to identify the emotion in a facial expression or judge how effective an action would be to manage an emotional situation.

Multiple different theoretical models underpin rating scales of EI. Some rating scales are based on ability theoretical models (i.e., the test-taker provides self-ratings of their skill at emotion perception, use, understanding, and management). Others are based on broader theoretical models that include a range of dispositions such as empathy, impulsiveness, self-esteem, social competence, and trait happiness (Petrides & Furnham, 2001). One of the dominant models is *Trait EI*, which underpins the TEIQue (Petrides, 2010). In this model, 16 EI facets are organized into four over-arching EI domains (wellbeing, self-control, emotionality, and sociability), which can be aggregated into a single 'trait EI' score. It has been suggested that trait EI should be conceptualized as a lower-order personality construct capturing variance not accounted for by existing personality measures (Petrides, Pita, & Kokkinaki, 2007). In this manuscript, we use the term 'Trait EI' generically to refer to all EI rating scale measures (including, but not limited to the TEIQue).

Meta-analyses show that both ability EI and trait EI are associated with valued life outcomes. These include academic performance, job performance, job satisfaction, wellbeing, relationship satisfaction among romantic couples, and both mental and physical health (Joseph & Newman, 2010; MacCann et al., 2020; Malouff, Schutte, & Thorsteinsson, 2014; Martins, Ramalho, & Morin, 2010; Miao, Humphrey, & Qian, 2017; Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2016). These meta-analyses suggest that the relationship between EI and these outcomes is generally stronger for rating scales than for ability scales (possibly because the outcome measures are also assessed with rating scales). The one exception appears to be academic performance, where ability scales show a stronger relationship with EI.

Emotional intelligence is also relevant to relationship quality. As relationship quality overlaps with attachment, it is reasonable to expect emotional intelligence and attachment will relate to each other. This is especially true when considering that whether the relationships are familial, friendly, or romantic, they are affected by the quality of communication, attitudes, expectations, and personal characteristics each individual brings to the relationship (for a review, see Malouff et al., 2014; Hamarta, Deniz, & Saltali, 2009). Stolarski, Postek, and Smieja (2011) found that women (but not men) high in ability EI presented constructive resolution strategies when presented with conflict. Similarly, Schröder-Abé and Schütz (2011) found that the self-reported EI of both partners was important for the perception of relationship satisfaction. Engagement in perspective-taking during conflict was positively related to EI. In friendships, higher ability EI scores (specifically the *managing emotions* branch) are positively related to the perceived quality of social interactions (Lopes et al., 2004).

1.2. Attachment theory

Bowlby (1970) proposed that attachment theory is broadly understood as the development of emotional and social connections between people beginning in early childhood. Initially studied in the context of children, styles of attachment were identified based on how the relationship with an early caregiver was experienced (Ainsworth, Blehar, Waters, & Wall, 1978). According to Bowlby's theory, the attachment system maintains emotional and physical caregiver-infant proximity with children internalizing the early attachment relations with caregivers prototypical of later relationships. Expanding on earlier work in children, a four-dimensional model of attachment was proposed for adults (Bartholomew, Horowitz, & Bartholomew, 1991). The model is based on the image (negative or positive) individuals develop of themselves and others (Bartholomew, 1990; Bartholomew et al., 1991). The model is comprised of: (a) *secure* attachment reflecting an individual's positive feeling toward themselves and others, (b) *preoccupied* attachment reflecting the negative beliefs about oneself compared to positive beliefs about others culminating in fear of abandonment (Main, Goldwyn, & Hesse, 2003), (c) *dismissive* attachment reflecting positive feelings toward oneself and negative feelings toward others, and (d) *fearful* attachment reflecting an unstable, confused view of oneself and others. A second, empirically supported two-dimensional model includes: (a) *anxiety* representing a fear of rejection and abandonment, and (b) *avoidance* reflecting the discomfort attributed with intimate relationships and a preference for independence (Esbjørn, Breinholst, Kriss, Hald, & Steele, 2015; Hazan & Shaver, 1987; Main et al., 2003). These two dimensions contrast with a secure attachment style, in which an individual does not fear rejection or abandonment and is comfortable with intimacy (Fraley & Shaver, 2021). This two-dimensional model incorporates elements of the earlier model, with *avoidance* comprising a *fearful and dismissive* attachment style and *anxiety* comprising a *preoccupied* attachment style.

The work of Hazan and Shaver (1987) extended research primarily conducted with children and caregivers in attachment theory to include adult relationships. This was following the observation that there are similarities between the security adults feel in a secure relationship to the way children respond in a secure relationship. This is not to suggest that the relationships experienced in childhood and adulthood are identical. Rather, the core assumptions underlying attachment theory are relevant to both child and adult relationships. Like EI, attachment styles are associated with valued life outcomes, including coping strategies and perceptions in interpersonal adult relationship dynamics (Collins, Ford, Guichard, & Allard, 2006; Kobak & Sceery, 1988).

Individuals with secure attachment recognize the impact of earlier experiences and their influence on interpersonal relationships in adulthood (Collins et al., 2006; Kobak & Sceery, 1988). In periods of distress, securely attached individuals tend to recognize their emotions and tend to engage in positive emotion regulation strategies such as seeking support from others compared to their less secure counterparts (Collins et al., 2006; Kobak & Sceery, 1988). In contrast, individuals with insecure attachment styles tend not to have a range of emotional competencies to work with to lessen the severity of negative situations (Collins & Read, 1990). Individuals with a preoccupied attachment style tend to experience an intense need for a relationship accompanied by a strong fear of abandonment (Collins & Read, 1990). Similarly, individuals with dismissive attachment styles tend to present themselves as self-sufficient, hiding deep-seated distrust of their partner's ability to provide emotional and social support (Guerrero, 1996). Finally, it was found individuals with a fearful attachment style were likely exposed to parental hostility, neglect, abuse, and rejection resulting in feelings of shame and distrust of others (Bartholomew et al., 1991), yet seek external validation (Park, Crocker, & Mickelson, 2004). Similarly, Santascoy, Burke, and Dovidio (2018) found that individuals with higher attachment avoidance tended to respond less favorably to warm, welcoming social situations suggesting a deep distrust toward the motivations of others. More generally, attachment styles have been found to predict the perception of relationship satisfaction, eating disorders, alcoholism, and mating strategies in dating couples, indicating the lasting and lifelong impact of social bonds formed in childhood (Brennan & Shaver, 1995; Collins & Read, 1990; Mikulincer & Shaver,

2007).

An individual's attachment style tends to predict effective (or ineffective) coping strategies in interpersonal relationships (Mikulincer, Dolev, & Shaver, 2004; Stevens, 2014). Individuals with insecure attachment styles tend to struggle with emotional and interpersonal relationships, romantically, socially, and in the workplace (Collins & Feeney, 2000). Avoidant attachment is generally related to a lack of self-awareness and sensitivity to one's emotional state. In contrast, anxiously attached individuals exhibited increased affective self-awareness but difficulty identifying and managing their emotions (Mikulincer et al., 2004; Stevens, 2014). Though attachment plays a significant role in developing prototypical interpersonal relationships, EI has also been found to predict relationship satisfaction, cooperativeness, empathic perspective-taking, and intimate relationship building (Cahill, Malouff, Little, & Schutte, 2020; Schutte et al., 2001; Wollny, Jacobs, & Pabel, 2019). EI is an integral element of psychosocial development. Accordingly, meta-analytic findings support the positive role of high EI in the success of interpersonal relationships (Malouff et al., 2014).

1.3. EI and attachment

Broadly speaking, attachment styles form early and may influence the later development of EI abilities and traits. Specifically, attachment styles affect how one perceives oneself and others, including one's own and others' emotions, the perceived underpinnings and consequences of one's own and others' emotions, and the typical ways of responding to emotions in interpersonal situations. These emotional characteristics form the core of both ability and trait models of EI.

For ability EI, attachment styles may affect how people perceive others' emotions, such that differences in emotion perception may flow on to differences in other EI abilities. Meyer, Pilkonis, and Beevers (2004) found that avoidant and attachment styles were related to biases in the processing of facial expressions. In this study, avoidant attachment was related to higher ratings of neutral faces as passive, boring, and simple-minded. Anxious attachment is related to higher ratings of neutral faces as nervous and shy, but lower ratings of neutral faces as likable (e.g., friendly, warm, trustworthy, good-natured). These appraisal biases in face perception are strongly conceptually related to emotion perception ability—people with anxious attachment are more likely to make errors when perceiving others' facial expressions (seeing more negative emotions and fewer positive emotions than are truly present in others' facial expressions). In the four-branch hierarchical model of ability EI, emotion perception is the basic building block in the hierarchy (Mayer et al., 2008). The development of higher-level abilities (such as emotion understanding and emotion management) depends on an accurate perception of emotions. If you cannot detect which emotions are present, you cannot accurately develop an understanding of when those emotions occur and how they change (emotion understanding) or what strategies will be effective for changing them (emotion management). For this reason, we expect that insecure attachment styles will show a negative relationship with ability EI, as they affect the perception of emotions, which in turn affects the higher-level branches of ability EI.

For trait EI, the broad emotional competencies underlying many of the major models are linked with the interpersonal functioning that is inextricably part of attachment styles. For example, the TEIQue EI model includes wellbeing, self-control, emotionality, and sociability domains (Petrides, 2010). There is a clear conceptual overlap between the EI *wellbeing* domain (the wellbeing that results from positive beliefs about oneself, one's life, and one's future) and a secure attachment style (positive feelings toward oneself and others), an anxious attachment style (negative expectations about future rejection and abandonment). The core shared characteristic is positive expectations (or the lack of them). Similarly, there is a clear conceptual overlap between the EI *sociability* domain (which involves communication, influencing others, and effectively forming networks with others) and an avoidant attachment style (involving a desire to avoid intimacy and strive for independence over inter-dependence). The core shared characteristic is engagement with other people (or the lack of it).

Based on the considerations outlined above, we make three hypotheses.

Hypothesis 1. EI will have a positive association with secure attachment. We predict that both ability and trait EI will have positive associations with secure attachment styles.

Hypothesis 2. EI will have a negative relationship with insecure attachment styles. We predict that both ability and trait EI will have negative associations with insecure attachment styles.

Hypothesis 3. The EI measurement method (ability versus rating scales) will moderate the EI/attachment associations, with stronger associations for rating scales than ability scales. Based on previous meta-analyses, we believe that results are likely to be stronger for trait EI than for ability EI, based both on: a) shared method effects of measurement (i.e., self-ratings for both EI and attachment); and b) the strong conceptual overlap between key models of trait EI and two major attachment styles (anxious and avoidant).

2. Method

2.1. Literature search

A search was conducted in January 2019 and updated in November 2019. The search terms ("EI" or "emotional intelligence") AND ("attachment style" or "attachment orientation" or "attachment") yielded 402 results from the databases PsychInfo, Medline, ProQuest Dissertations & Theses, and Web of Science of which titles and abstracts were scanned. The search was limited to English language studies. Additionally, reference searches were conducted to identify potential studies that may have been missed in the initial search. The database search, combined with the reference search, yielded a total of 408 studies that progressed to full-text review to check for specific inclusion and exclusion criteria. The overall literature search resulted in 26 studies containing 28 samples that fit our inclusion criteria (see Fig. 1.)

2.2. Inclusion and exclusion criteria

To ensure only studies that adequately addressed the research question were included, the following inclusion and exclusion criteria were defined for eligibility of studies: (a) an EI measure based on an empirically tested model (psychometrically validated) was used in the study, and (b) an attachment style measure based on an empirically tested model (psychometrically validated) was used in the study; (c) participants were required to be neuro-typical, non-clinical adults over 18 years old; (d) only English language paper were considered (See Table 1).

2.3. Coding

The coding procedure was developed based on Cochrane collaboration standards (Higgins & Green, 2011). Study characteristics comprising author, date, sample size, percentage of female participants, mean age, attachment instrument, attachment style, EI instrument, EI domain, EI type (trait versus ability), Cronbach's alpha, and Pearson correlations were extracted and coded into a worksheet. Quality control was conducted in order to form a quality index. Two of the authors independently double coded all included studies. Any discrepancies were resolved by the third author checking the original manuscript. Coding decisions were shared among all authors. In the case of missing data, the authors of the applicable study were contacted and invited to send through data for inclusion in the analysis.

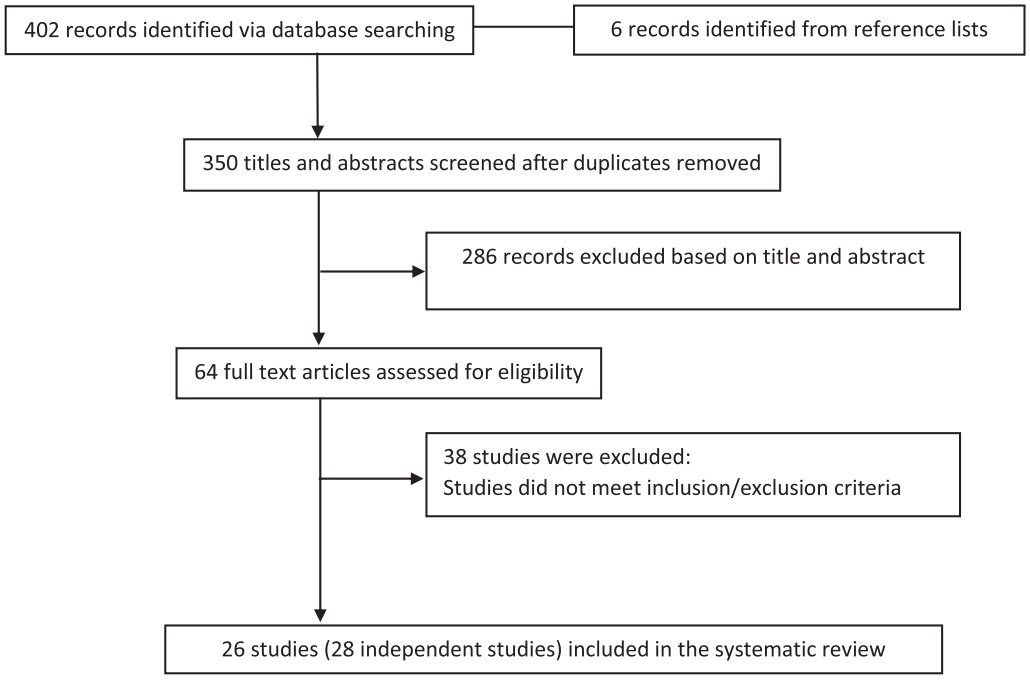

Fig. 1. Quorum Chart of studies included in the meta-analysis.

2.4. Meta-analytic approach

The meta-analysis was conducted using the 'robumeta' package (Fisher & Tipton, 2015). The Pearson's *r* correlation coefficients were extracted from studies meeting the eligibility criteria and were used as the measure of effect size in the meta-analysis. I^2 was used to evaluate heterogeneity of correlations across included studies (Higgins & Thompson, 2002). In order to account for the dependence between effect sizes (e.g., multiple effect sizes drawn from the same study), robust variance estimation (RVE) was utilized. RVE adjusts the standard errors in order to account for the clustered nature of the included studies and provide parameter estimates that are robust to the strength of the estimate of the correlation between the effect sizes (Hedges, Tipton, & Johnson, 2010).

3. Results

3.1. Meta-analysis

3.1.1. Relationships between attachment styles and EI

We first examined the relationships between attachment style and EI using separate multi-level random effects meta-analysis with RVE for each attachment style. Given that such analyses are unreliable with small samples ($df < 4$), we did not perform an analysis for a dependent attachment style ($n = 2$, $k = 8$; Fisher & Tipton, 2015). The results of the analysis are presented in Table 2.

3.1.2. Hypotheses 1 and 2: relationship of EI to attachment styles

EI showed a significant positive association with secure attachment ($r = 0.29$), of moderate effect size. This supports Hypothesis 1. EI showed significant negative associations with anxiety ($r = -0.20$), avoidance ($r = -0.30$), fearful ($r = -0.14$) and preoccupied attachment styles ($r = -0.06$), which ranged in size from very small to moderate. These results support Hypothesis 2.

3.1.3. Hypothesis 3: Type of EI (ability versus trait) as a moderator

To examine how the type of EI measure influenced the relationship with attachment meta-regressions for each attachment style were performed, comparing effect sizes for trait EI with ability EI (controlling for clustering) were performed. Results are presented in Table 3. The EI/attachment relationship only significantly differed for ability versus trait EI in the case of avoidant attachment. For avoidant attachment, there was a significantly larger negative relationship for trait EI ($r = -0.36$, $k = 21$) as compared to ability EI ($r = -0.21$, $k = 40$; see Table 4 for subgroups analyses). This supports Hypothesis 3. For anxious attachment, there was no significant difference between trait EI ($r = -0.25$, $k = 26$) and ability EI ($r = -0.16$, $k = 40$). For secure attachment, there was likewise no difference between trait EI ($r = 0.31$, $k = 30$) and ability EI ($r = 0.17$, $k = 10$). There were also no significant differences for preoccupied, fearful, or dismissive attachment styles. Results provided partial support for Hypothesis 3.

3.1.4. Publication bias

We assessed the likelihood of publication bias by inspecting the funnel plot (see Fig. 2) of the relationship between observed effects and standard error for asymmetry (Schwarzer et al., 2015). Egger's test was also run by including standard error as a predictor in a meta-regression. Based on the funnel plots and a non-significant Egger's test of asymmetry ($b = 0.55$, $p = .672$), risk of publication bias was judged to be low.

4. Discussion

Results demonstrated that EI was significantly related to both secure and insecure attachment, in line with hypotheses 1 and 2. EI showed a moderate positive association with secure attachment and a negative association with the two major insecure attachment styles (a moderate negative association with avoidant attachment and a small to moderate negative association with anxious attachment). EI also showed small but significant relationships with fearful and preoccupied attachment but was not significantly related to dependent or dismissing attachment. There was more limited support for hypothesis 3 (a distinction between ability and trait EI). For all results except for dismissive attachment, the magnitude of relationship was stronger for trait EI than ability EI. Associations were significant for five of the six attachment styles for trait EI (all but dismissive attachment) but only for two of the six attachment styles for ability EI (anxious and avoidant attachment). However, effect

Table 1
Studies included in the meta-analysis.

Author(s) & year	Sample demographics				Participant profile	Attachment tool	EI tool	Attachment style	EI type	Results	
	N	Mean age	% Female	Country							
Ability emotional intelligence											
Boncher (2003)	271	21.75	55	USA	Student	RAAS	MSCEIT	Anxiety	Perceiving	−0.03	
								Anxiety	Understanding	0.01	
								Anxiety	Managing	−0.05	
								Anxiety	Facilitating	−0.09	
								Anxiety	Total Ability EI	−0.03	
								Dependent	Perceiving	−0.01	
								Dependent	Understanding	0.14	*
								Dependent	Facilitating	0.08	
								Dependent	Perceiving	0.06	
								Dependent	Total Ability EI	0.07	
Cherry, Fletcher, and O'Sullivan (2013)	200	18.89	56	UK	Student	ECR-SF	MSCEIT	Avoidance	Experiential	−0.26	**
								Avoidance	Strategic	−0.27	**
								Avoidance	Total Ability EI	−0.28	**
								Anxiety	Experiential	−0.19	**
								Anxiety	Strategic	−0.08	
								Anxiety	Total Ability EI	−0.16	
								Avoidance	Perceiving	−0.21	**
								Avoidance	Facilitating	−0.23	**
								Avoidance	Understanding	−0.20	**
								Avoidance	Managing	−0.28	**
								Anxiety	Perceiving	−0.12	
								Anxiety	Facilitating	−0.23	**
								Anxiety	Understanding	−0.02	
								Anxiety	Managing	−0.10	
Cherry, Fletcher, and O'Sullivan (2014)	296	19.6	55	UK	Mixed	ECR-SF	MSCEIT	Avoidance	Experiential	−0.24	**
								Avoidance	Strategic	0.20	*
								Avoidance	Total Ability EI	−0.23	**
								Anxiety	Experiential	−0.07	
								Anxiety	Strategic	−0.08	
								Anxiety	Total Ability EI	−0.06	
Cherry, Fletcher, Berridge, and O'Sullivan (2018)	26	26.61	80.8	UK	Community	ECR-SF	MSCEIT	Avoidance	Perceiving	−0.40	*
								Avoidance	Facilitating	−0.36	
								Avoidance	Understanding	−0.30	
								Avoidance	Managing	−0.12	
								Avoidance	Strategic	−0.39	*
								Avoidance	Experiential	−0.37	
								Avoidance	Total Ability EI	−0.43	*
								Anxiety	Perceiving	−0.17	
								Anxiety	Facilitating	−0.38	
								Anxiety	Understanding	−0.03	
								Anxiety	Managing	−0.22	
								Anxiety	Strategic	−0.22	
								Anxiety	Experiential	−0.15	
								Anxiety	Total Ability EI	−0.22	
Dimitrijević, Marjanović, and Dimitrijević (2018)	251	40.3	53.5	Serbia	Community	ECR-R	MSCEIT	Avoidance	Perceiving	−0.08	
								Avoidance	Facilitating	−0.17	**
								Avoidance	Understanding	−0.21	**
								Avoidance	Managing	−0.30	**
								Avoidance	Total Ability EI	−0.25	**
								Anxiety	Perceiving	−0.33	**
								Anxiety	Facilitating	−0.34	**
								Anxiety	Understanding	−0.31	**
								Anxiety	Managing	−0.47	**
								Anxiety	Total Ability EI	−0.49	**
Forlenza (2006)	120	21.65	74.2	USA	Student	ECR-R	MSCEIT	Anxiety	Understanding	−0.07	
								Anxiety	Managing	−0.25	**
								Avoidance	Understanding	−0.07	
								Avoidance	Managing	−0.28	**
Goldenberg (2004)	223	38.4	69.1	Canada	Community	ECR-SF	EIS	Avoidance	Appraisal	−0.27	***
								Avoidance	Utilisation	−0.21	**
								Avoidance	Mood Regulation	−0.40	***
								Avoidance	Experiencing/ Sharing	−0.47	***
								Anxiety	Appraisal	−0.26	***
								Anxiety	Utilisation	−0.11	
								Anxiety	Mood Regulation	−0.48	***
								Anxiety		−0.28	***

(*continued on next page*)

Table 1 (*continued*)

Author(s) & year	Sample demographics				Participant profile	Attachment tool	EI tool	Attachment style	EI type	Results	
	N	Mean age	% Female	Country							
									Experiencing/ Sharing		
								Avoidance	Perceiving	−0.11	
								Avoidance	Facilitating	−0.08	
								Avoidance	Understanding	−0.03	
								Avoidance	Managing	−0.10	
								Anxiety	Perceiving	−0.10	
								Anxiety	Facilitating	0.03	
								Anxiety	Understanding	0.09	
								Anxiety	Managing	−0.02	
Kafetsios (2004)	239	38.7	55.6	UK	Mixed	RSQ	MSCEIT	Secure	Total Ability EI	0.28	***
								Secure	Perceiving	0.08	
								Secure	Understanding	0.23	**
								Secure	Managing	0.19	*
								Secure	Facilitating	0.20	**
								Dismissing	Total Ability EI	0.06	
								Dismissing	Perceiving	−0.11	
								Dismissing	Understanding	0.28	***
								Dismissing	Managing	0.04	
								Dismissing	Facilitating	−0.05	
								Preoccupied	Total Ability EI	−0.04	
								Preoccupied	Perceiving	−0.16	
								Preoccupied	Understanding	−0.04	
								Preoccupied	Managing	0.04	
								Preoccupied	Facilitating	−0.05	
								Fearful	Total Ability EI	−0.09	
								Fearful	Perceiving	−0.10	
								Fearful	Understanding	−0.01	
								Fearful	Managing	−0.01	
								Fearful	Facilitating	−0.02	
Lanciano, Curci, Kafetsios, Elia, and Zammuner (2012)	157	19.6	100	Italy	Student	RSQ	MSCEIT	Avoidance	Perceiving	−0.33	***
								Avoidance	Understanding	−0.35	***
								Avoidance	Managing	−0.33	***
								Avoidance	Facilitating	−0.29	***
								Anxiety	Perceiving	−0.22	***
								Anxiety	Understanding	−0.18	*
								Anxiety	Managing	−0.27	***
								Anxiety	Facilitating	−0.20	*
Mohamed (2012)	260	20.38	77.3	UK	Student	RSQ	MSCEIT	Secure	Perceiving	0.04	
								Secure	Understanding	0.05	
								Secure	Managing	0.23	***
								Secure	Facilitating	0.21	***
								Secure	Total Ability EI	0.15	*
								Preoccupied	Perceiving	−0.09	
								Preoccupied	Understanding	0.13	*
								Preoccupied	Managing	−0.04	
								Preoccupied	Facilitating	0.03	
								Dismissing	Perceiving	0.05	
								Dismissing	Understanding	−0.05	
								Dismissing	Managing	−0.08	
								Dismissing	Facilitating	−0.09	
								Dismissing	Total Ability EI	−0.05	
								Fearful	Perceiving	−0.05	
								Fearful	Understanding	−0.09	
								Fearful	Managing	−0.21	***
								Fearful	Facilitating	−0.20	**
								Fearful	Total Ability EI	−0.17	**
Ritter (2013)	92	34.34	72.8	USA	Student	ECR-R	MSCEIT	Anxiety	Perceiving	−0.09	
								Avoidance	Perceiving	−0.19	
								Anxiety	Understanding	−0.16	
								Avoidance	Understanding	−0.23	*
								Anxiety	Managing	−0.09	
								Avoidance	Managing	−0.08	
								Anxiety	Facilitating	0.01	
								Avoidance	Facilitating	−0.10	
Trait emotional intelligence											
Burns (2011)	233	20.66	59.7	USA	Student	ECR-R	TMMS	Anxiety	Attention	0.09	
								Anxiety	Clarity	−0.10	
								Anxiety	Mood Repair	−0.09	
								Avoidance	Attention	−0.06	

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Table 1 (continued)

	Sample demographics				Participant profile	Attachment tool	EI tool	Attachment style	EI type	Results	
	N	Mean age	% Female	Country							
								Avoidance	Clarity	−0.27	
								Avoidance	Mood Repair	−0.28	
Caldwell (2013)	247	20.54	67	USA	Student	ECR-R	Teique-SF	Anxiety	Total Trait EI	−0.39	**
								Avoidance	Total Trait EI	−0.33	**
Chang (2018)	510	21	76.5	USA	Student	ECR-R	Teique-SF	Anxiety	Total Trait EI	−0.57	**
								Avoidance	Total Trait EI	−0.44	**
Dimitrijević et al. (2018)	251	40.3	53.5	Serbia	Community	ECR-R	Teique-SF	Avoidance	Wellbeing	−0.41	**
								Avoidance	Self Control	−0.35	**
								Avoidance	Emotionality	−0.49	**
								Avoidance	Sociability	−0.40	**
								Avoidance	Total Trait EI	−0.49	**
								Anxiety	Wellbeing	−0.49	**
								Anxiety	Self Control	−0.52	**
								Anxiety	Emotionality	−0.58	**
								Anxiety	Sociability	−0.51	**
								Anxiety	Total Trait EI	−0.63	**
Doinita (2015)	65	41.5	58.5	Romania	Community	AAS-R	EIT	Secure	Total Trait EI	0.28	*
								Anxiety	Total Trait EI	−0.05	*
Dvorak (2014)	173	23	100	USA	Student	ECR-RS	Teique-SF	Avoidance	Total Trait EI	−0.32	***
	41	23	0					Avoidance	Total Trait EI	−0.24	***
	173	23	100					Anxiety	Total Trait EI	−0.28	***
	41	23	0					Anxiety	Total Trait EI	−0.31	***
Fullam (2002)	176	29.5	64.2	USA	Student	AAS-R	TMMS	Secure	Total Trait EI	0.29	**
								Secure	Clarity	0.18	**
								Secure	Attention	0.15	**
								Secure	Mood Repair	0.31	**
								Fearful	Total Trait EI	−0.25	**
								Fearful	Clarity	−0.16	*
								Fearful	Attention	−0.21	**
								Fearful	Mood Repair	−0.15	*
								Preoccupied	Total Trait EI	−0.21	**
								Preoccupied	Clarity	−0.21	**
								Preoccupied	Attention	0.07	
								Preoccupied	Mood Repair	−0.21	**
								Dismissing	Total Trait EI	−0.30	
								Dismissing	Clarity	−0.10	
								Dismissing	Attention	−0.18	*
								Dismissing	Mood Repair	0.04	
Hamarta et al. (2009)	463	18.23	58.7	Turkey	Student	RSQ	EQ-I	Secure	Intrapersonal	0.33	**
								Preoccupied	Intrapersonal	−0.04	
								Dismissing	Intrapersonal	−0.01	
								Fearful	Intrapersonal	−0.19	**
								Secure	Interpersonal	0.32	**
								Preoccupied	Interpersonal	0.10	*
								Dismissing	Interpersonal	−0.13	**
								Fearful	Interpersonal	−0.10	*
								Secure	Adaptability	0.20	**
								Preoccupied	Adaptability	−0.14	**
								Dismissing	Adaptability	0.07	
								Fearful	Adaptability	−0.12	**
								Secure	Stress Management	0.21	**
								Preoccupied	Stress Management	−0.08	
								Dismissing	Stress Management	0.02	
								Fearful	Stress Management	−0.21	**
								Secure	General Mood	0.24	**
								Preoccupied	General Mood	−0.03	
								Dismissing	General Mood	0.01	
								Fearful	General Mood	−0.17	**
Koohsar and Bonab (2011)	88	37	53	Iran	Community	AAS-R	TMMS	Dependent	Attention	−0.24	*
								Dependent	Clarity	−0.19	*
								Dependent	Mood Repair	−0.14	
								Anxiety	Attention	0.76	**
								Anxiety	Clarity	0.48	**
								Anxiety	Mood Repair	0.45	**
Li and Zheng (2014)	585	20	46.2	China	Student	ECR	SREIT	Avoidance	Total Trait EI	−0.28	**
								Anxiety	Total Trait EI	−0.14	**

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Table 1 (*continued*)

Author(s) & year	Sample demographics				Participant profile	Attachment tool	EI tool	Attachment style	EI type	Results	
	N	Mean age	% Female	Country							
Marks, Horrocks, and Schutte (2016)	342	33.93	78.1	USA	Student	ECR	AES	Avoidance	Total Trait EI	−0.40	**
								Anxiety	Total Trait EI	−0.31	**
Mohamed (2012)	305	22.19	79.1	UK	Student	RSQ	SEIS	Secure	Total Trait EI	0.32	***
								Preoccupied	Total Trait EI	−0.03	
								Fearful	Total Trait EI	−0.23	***
								Dismissing	Social Skill	−0.17	**
								Fearful	Social Skill	−0.19	***
								Secure	Social Skill	0.33	***
								Preoccupied	Social Skill	0.09	
								Dismissing	Optimism	0.10	
								Fearful	Optimism	−0.27	***
								Secure	Optimism	0.28	***
								Preoccupied	Optimism	−0.17	**
								Dismissing	Appraisal	0.07	
								Fearful	Appraisal	−0.10	
								Secure	Appraisal	0.15	*
								Preoccupied	Appraisal	0.02	
								Dismissing	Using	0.08	
								Fearful	Using	−0.02	
								Secure	Using	0.06	
								Preoccupied	Using	0.02	
Mohamed (2012)	260	20.38	77.3	UK	Student	RSQ	Teique-SF	Secure	Total Trait EI	0.57	***
								Secure	Total Trait EI	0.45	***
								Preoccupied	Total Trait EI	−0.17	**
								Preoccupied	Total Trait EI	−0.07	
								Dismissing	Total Trait EI	−0.08	
								Dismissing	Total Trait EI	−0.02	
								Fearful	Total Trait EI	−0.43	***
								Fearful	Total Trait EI	−0.27	***
								Secure	Wellbeing	0.53	***
								Secure	Self Control	0.37	***
								Secure	Emotionality	0.40	***
								Secure	Sociability	0.36	***
								Secure	Optimism	0.39	***
								Secure	Appraisal	0.28	***
								Secure	Social Skill	0.37	***
Mohamed (2012)								Secure	Using	0.21	***
								Preoccupied	Wellbeing	−0.19	**
								Preoccupied	Self Control	−0.27	***
								Preoccupied	Emotionality	0.11	
								Preoccupied	Sociability	−0.16	*
								Preoccupied	Optimism	−0.23	***
								Preoccupied	Appraisal	−0.05	
								Preoccupied	Social Skill	0.08	
								Preoccupied	Using	0.06	
								Dismissing	Wellbeing	−0.09	
								Dismissing	Self Control	0.02	
								Dismissing	Emotionality	−0.25	***
								Dismissing	Sociability	0.08	
								Dismissing	Optimism	0.04	
								Dismissing	Appraisal	−0.01	
								Dismissing	Social Skill	−0.08	
								Dismissing	Using	−0.01	
								Fearful	Wellbeing	−0.43	***
								Fearful	Self Control	−0.37	***
								Fearful	Emotionality	−0.34	***
								Fearful	Sociability	−0.08	
								Fearful	Optimism	−0.33	***
								Fearful	Appraisal	−0.14	*
								Fearful	Social Skill	−0.20	**
								Fearful	Using	−0.02	
Mulder (2016)	325	39	61.8	USA	Community	ECR	Teique-SF	Avoidance	Total Trait EI	−0.60	**
								Anxiety	Total Trait EI	−0.55	**
Neustadt, Chamorro-Premuzic, and Furnham (2011)	211	40.1	48	UK	Community	AAW	Mini-Teique	Secure	Total Trait EI	0.55	**
								Anxiety	Total Trait EI	−0.52	**
Nourmand (2013)	110	29.85	85.5	USA	Community	ECR-R	Wong Law	Avoidance	Total Trait EI	−0.34	**

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Table 1 (*continued*)

Author(s) & year	Sample demographics				Participant profile	Attachment tool	EI tool	Attachment style	EI type	Results	
	N	Mean age	% Female	Country							
								Anxiety	Total Trait EI	−0.33	**
Obeid et al. (2019)	789	30.3	45.2	Lebabnon	Community	RSQ	QEISA	Secure	Emotional Awareness	0.19	***
								Preoccupied	Emotional Awareness	−0.01	
								Fearful	Emotional Awareness	−0.05	
								Dismissing	Emotional Awareness	0.02	
								Secure	Emotion Management	0.23	***
								Preoccupied	Emotion Management	−0.09	**
								Fearful	Emotion Management	−0.10	**
								Dismissing	Emotion Management	−0.07	
								Secure	Socio-Emotional Awareness	0.27	***
								Preoccupied	Socio-Emotional Awareness	−0.05	
								Fearful	Socio-Emotional Awareness	−0.13	**
								Dismissing	Socio-Emotional Awareness	−0.03	
								Secure	Relationship Management	0.27	***
								Preoccupied	Relationship Management	−0.08	*
								Fearful	Relationship Management	−0.11	**
								Dismissing	Relationship Management	−0.02	
Stevens (2017)	116	19	83.6	USA	Student	ECR	SREIT	Anxiety	Perceiving	0.10	
								Avoidance	Perceiving	−0.25	**
								Anxiety	Managing Own	−0.19	*
								Avoidance	Managing Own	−0.20	*
								Anxiety	Managing Others	0.07	
								Avoidance	Managing Others	−0.21	*
								Anxiety	Using	0.19	*
								Avoidance	Using	−0.16	
								Anxiety	Total Trait EI	0.04	
								Avoidance	Total Trait EI	−0.28	**

Note: RAAS = Revised Adult Attachment Scale (Collins & Read, 1996); ECR-SF = Experiences in Close Relationships Scale - Short Form (Wei et al., 2007); ECR-R = Experiences in Close Relationships Scale - Revised (Fraley et al., 2000); RSQ = Relationship Scales Questionnaire (Griffin & Bartholomew, 1994); AAS-R = Adult Attachment Scale - Revised (Collins & Read, 1996); ECR-RS = Experiences in Close Relationships - Relationship Structures (Fraley et al., 2000); AAW = Adult Attachment in the Workplace (Neustadt et al., 2011); SREIT = Self- Report Emotional Intelligence Test (Schutte et al., 1998); MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer and Salovey, 2007); TEIQue = Trait Emotional Intelligence Questionnaire (Petrides, 2009); QEISA = The Quick Emotional Intelligence Self-Assessment Mohapel, 2015); Wong Law = Wong Law Emotional Intelligence Test (Wong & Law, 2002); mini-TEIQue = mini Trait Emotional Intelligence Questionnaires (Petrides & Furnham, 2003); TEIQue-SF = Trait Emotional Intelligence Questionnaire- Short Form (Petrides, 2009); SEIS = Schutte Emotional Intelligence Scale (Schutte et al., 1998); AES = Assessing Emotions Scale (Schutte et al., 1998); TMMS = Trait Meta Mood Scale (Mayer et al., 1998); EQ-I = Emotional Quotient Inventory (Bar-On, 1997); EIT = Emotional Intelligence Test (Bar-On, 2006); EIS = Emotional Intelligence Scale (Schutte et al., 1998).

Table 2
Results of the meta-analysis using the 'robumeta' package in R.

Attachment Dimension	*n*	*k*	*r*	*SE*	*95%CI*	I^2	*p*
Anxious	22	71	−0.20	0.05	[−0.32,-0.09]	95.02%	0.001
Avoidant	18	61	−0.30	0.03	[−0.36,-0.23]	87.51%	<0.001
Secure	8	40	0.29	0.04	[0.19, 0.39]	86.37%	<0.001
Fearful	6	38	−0.14	0.02	[−0.21,-0.08]	68.20%	0.002
Preoccupied	6	37	−0.06	0.01	[−0.02,−0.02]	68.02%	0.013
Dismissing	6	37	−0.02	0.02	[−0.08,0.04]	73.65%	0.369
Dependent	2	8	−0.05	0.13	[−1.68,1.58]	78.80%	0.768

Note: n = cumulative sample size; k = number of independent studies; r = uncorrected effect size;

Table 3
Meta-regressions for each attachment style comparing self-report EI and ability EI.

Attachment Dimensions	*n*	*k*	*b*	*SE*	*95% CI*		*p*
Anxiety	22	71					
Intercept			−0.14	0.03	[−0.21,	−0.08]	0.001
Report			−0.10	0.09	[−0.28,	0.09]	0.28
Avoidance	18	61					
Intercept			−0.21	0.03	[−0.28,	−0.14]	0.001
Report			−0.14	0.05	[−0.25,	−0.04]	0.01
Secure	8	40					
Intercept			0.18	0.03	[−0.15,	0.51]	0.09
Report			0.13	0.06	[−0.25,	0.51]	0.21
Fearful	6	38					
Intercept			−0.07	0.04	[−0.62,	0.48]	0.34
Report			−0.09	0.04	[−0.35,	0.16]	0.21
Preoccupied	6	37					
Intercept			−0.04	0.02	[−0.34,	0.27]	0.37
Report			−0.03	0.03	[−0.22,	0.17]	0.54
Dismissing	6	37					
Intercept			0.02	0.04	[−0.46,	0.51]	0.67
Report			−0.06	0.05	[−0.32,	0.21]	0.38

Note: n = cumulative sample size; k = number of independent studies; b = uncorrected effect size;

size was only significantly different for trait versus ability EI for avoidant attachment.

The link between secure attachment and higher EI echoes prior findings suggesting securely attached individuals possess socially desirable, adaptive characteristics. The positive relationship between secure attachment and EI is an intuitive finding considering emotional bonds and relationship competencies, which affect the development of both attachment style (Fraley & Shaver, 2021; Saarni, 1993) and EI (Denham, 1998; Szcześniak & Tułecka, 2020) form in early childhood. A caregiver's reaction in specific situations, in turn, informs a child's reactions and interpretations of various intra and interpersonal situations (Thompson, 2011). The impact of these situations can have a positive result in which a secure attachment style forms, or a negative result in which an insecure attachment style will form.

Anxious and avoidant attachment styles showed significant negative associations with EI, supporting the second hypothesis. Similarly, fearful attachment was significantly negatively related to EI, and preoccupied attachment had a small but non-significant negative relationship with EI. Longitudinal research has shown affective deficits present in preschool-aged children carry through into Kindergarten and are thought to be prototypical of deficits in adult relationships (Denham, Blair, Schmidt, & DeMulder, 2002). In adults, Stevens (2014) found individuals with avoidant attachment styles had limited insight into their own emotional competencies. Similarly, Kafetsios (2004) found individuals had differential relationships between the branches of EI and insecure attachment styles, highlighting the different stages of development of emotional competencies. Examining insecure attachment at the branch level of EI is vital in order to closely examine the types of emotional competency deficits in each of the insecure attachment styles. Unfortunately, the limited studies available for inclusion in this meta-analysis meant this was unable to be quantitatively tested. Furthermore, as previously mentioned, the limited studies available may have impacted the ability of the meta-analysis to tease apart any differences in the relationship between attachment styles and trait or ability EI. Only avoidant attachment differed as a function of EI measure with a significantly larger negative relationship found for trait EI compared to ability EI.

Taken together, the overall findings of this meta-analysis highlight the importance of encouraging continued exploration of insecure attachment at the facet level (i.e., fearful, preoccupied, and dismissive) along with the anxious-avoidant model of attachment for a broader view. In order to make more holistic conclusions relating to the emotional competencies present in multiple attachment styles, additional research is needed that investigates the relationships between each of the components of EI and attachment styles.

Closer examination of the literature shows secure attachment is generally positively associated with EI (both trait and ability models) while the other attachment styles are generally negatively associated with EI (both trait and ability models). There are significant negative relations of both avoidance and anxious attachment with global trait and ability EI. Results also indicated significant negative relationships of dismissive, preoccupied, and fearful attachment with EI, although some researchers found the opposite for some ability EI branches (i.e., a significant positive relationship between EI understanding and dismissive attachment; Kafetsios, 2004).

While total EI scores give us an indication of overall EI, it is what is happening at the branch level of EI that may be of most interest. Three of the studies included in this review reported positive associations with attachment styles other than secure (Boncher, 2003; Fullam, 2002; Kafetsios, 2004). Significant positive associations were found between dependent and dismissing attachment with the emotion understanding branch of ability EI (Boncher, 2003; Kafetsios, 2004), and also between fearful attachment and trait EI (Fullam, 2002). Prior research has found attachment styles differ in the way individuals process incoming emotional information (Fraley, Davis, & Shaver, 1998; Fraley & Shaver, 2021; Tucker & Anders, 1999). In fact, it is reasonable to expect attachment styles would perform differently to each other on the four branches of ability EI. For example, fearfully attached individuals tend to more quickly recognize "happiness" and "fearful" facial expressions compared to the other attachment styles (Niedenthal, Brauer, Robin, & Innes-Ker, 2002). Highly anxious individuals tend to be acutely aware of

Table 4
Subgroups analysis of the various combinations of attachment style and EI.

	n	*k*	*r*	*SE*	*95% CI*	I^2	*p*
Ability EI							
Anxiety	9	45	−16	0.04	[−0.25,-0.07]	78.91%	0.004
Avoidance	8	40	−0.21	0.03	[−0.28,-0.14]	77.46%	<0.001
Secure	2	10	0.17	0.03	[−0.22,0.55]	64.85%	0.114
Dismissing	2	10	0	0.04	[−0.56,0.56]	80.69%	0.99
Preoccupied	2	9	−0.02	0.03	[−0.39,0.34]	63.80%	0.60
Fearful	2	10	−0.1	0.05	[−0.72,0.53]	57.01%	0.30
Self-Report EI							
Anxiety	14	26	−0.25	0.08	[−0.43,-0.07]	96.28%	0.010
Avoidance	11	21	−0.36	0.04	[−0.44,-0.27]	84.69%	<0.001
Secure	7	30	0.31	0.05	[0.20,0.43]	87.11%	0.001
Fearful	5	28	−0.17	0.03	[−0.25,-0.09]	75.09%	0.004
Preoccupied	5	28	−0.06	0.02	[−0.12,-0.01]	73.55%	0.03
Dismissing	5	27	−0.03	0.02	[−0.10,0.03]	71.41%	0.21

Note: n = cumulative sample size; k = number of independent studies; r = uncorrected effect size; SE = standard error; 95%CI = 95% confidence interval; I^2 = i-squared; p = *p*-value.

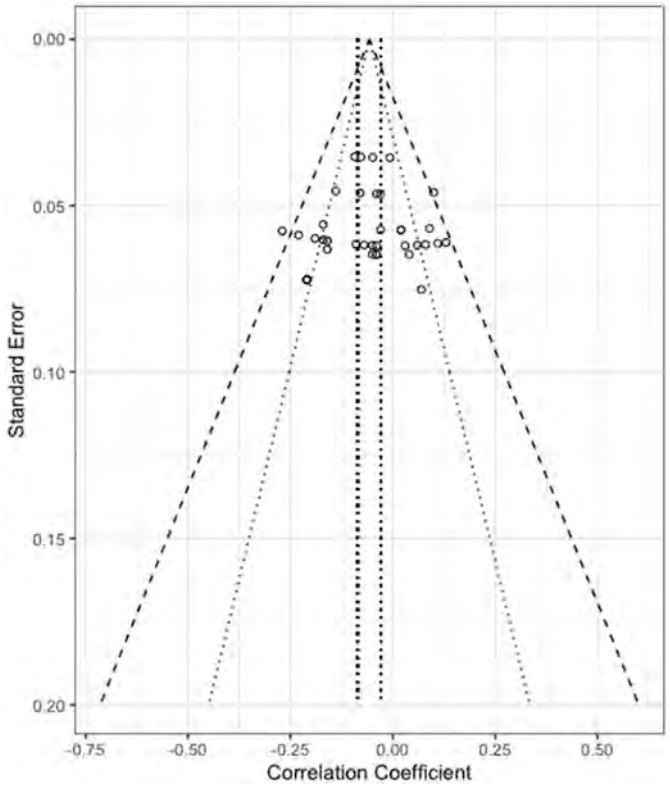

Fig. 2. Funnel plot assessing publication bias.

changes in the facial expressions of others but tend to make more mistakes when trying to understand the emotion underlying the facial expressions (Fraley, Niedenthal, Marks, Brumbaugh, & Vicary, 2006). While it was expected we would find evidence to support these prior findings, support was limited. This is potentially due to the limitations in the way ability EI is measured (Fiori et al., 2014) and the limited number of studies included in this review.

4.1. Future research directions

Given the relationship between attachment and EI is complex, relying on direct measurement of the relationship may be misleading. Furthermore, the development of attachment styles (Kafetsios & Nezlek, 2002) and EI (Kafetsios, 2004) over the lifespan may mean the prevalence of undergraduate students in various study samples that have a narrow age diversity, make it difficult to generalize. It is possible there is 'causal flow' in both directions. That is, while we hypothesized that early attachment leads to the development of later EI (through particular views and biases in interpreting one's own and other's emotions), it is also possible highly emotionally intelligent people develop better relationships. This could occur through a better understanding of emotional situations and better knowledge of how to manage such situations, resulting in less conflict, such that they come to view others as safe and loving. In order to make the causal inference that attachment leads to the development of EI, longitudinal research is required, and even then, this might not be sufficient and would require careful interpretation. Importantly, the data presented shows there are currently a limited number of studies investigating the role of attachment at the branch level of ability EI. As such, this meta-analysis's overall results may provide a direction for future research to more closely examine the relationship between attachment and EI. Specifically, the extent to which context is important when examining these relationships. Finally, in order to gain a deeper understanding of the emotional complexities involved in the various attachment styles and dimensions, differentiating between negative and positive affect while using instruments to more finely measure emotion regulation, for example, may be beneficial.

5. Conclusion

The examination of prior studies found the relationship between attachment and EI to be complex. However, it highlights important differences between EI branches and the relationships to various attachment styles and dimensions. Furthermore, it highlights the importance of both a firm theoretical foundation and a clear understanding of what instruments are measuring with which to base further research. Substantial additional research considering the context of attachment styles and how that context may relate to self-reported and ability EI will help clarify the state of the literature.

The overall findings from this meta-analysis provide an excellent opportunity for future research to explicate the impact of various factors on the relationship between attachment and EI.

Declaration of competing interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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