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Developments in Trait Emotional Intelligence Research

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Abstract

Trait emotional intelligence ("trait EI") concerns our perceptions of our emotional abilities, that is, how good we believe we are in terms of understanding, regulating, and expressing emotions in order to adapt to our environment and maintain well-being. In this article, we present succinct summaries of selected findings from research on (a) the location of trait EI in personality factor space, (b) the biological underpinnings of the construct, (c) indicative applications in the areas of clinical, health, social, educational, organizational, and developmental psychology, and (d) trait EI training. Findings to date suggest that individual differences in trait EI are a consistent predictor of human behavior across the life span.

Keywords
individual differences, TEIQue, trait emotional self-efficacy, well-being

Trait emotional intelligence ("trait EI" or "trait emotional self-efficacy") essentially concerns people's perceptions of their emotional world. The roots of trait EI lie in the longstanding study of emotions from a personality perspective (Revelle & Scherer, 2009). Petrides and Furnham (2000) proposed the label partly to reflect the perspective that Goleman's (1995) *Emotional Intelligence* represented a popularization of ideas that had long been researched in the scientific literature on personality. Most research in the field of EI is based on self-reports, so it is, de facto, conducted within the broader domain of trait EI. Although comparatively limited, there is an emerging literature on observer reports (e.g., Furnham, Race, & Rosen, 2014; Gugliandolo, Costa, Cuzzocrea, Larcan, & Petrides, 2015) that also falls within the trait EI domain, concerning, as it does, perceptions of emotion.

The purpose of this article is to provide a broad overview of important findings regarding trait EI. Given the space limitations of this special section, we do not provide in-depth cover-

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age of the reviewed findings and limit our discussion of important, but less salient in the literature, results, such as those pertaining to maladaptive effects of high trait EI (e.g., Austin, Saklofske, Smith, & Tohver, 2014; Petrides, Vernon, Aitken Schermer, & Veselka, 2011). Another caveat concerns our virtually exclusive focus on global trait EI scores. Trait EI is a hierarchical, multidimensional construct and its global level cannot possibly encapsulate the entire variation in emotional perceptions positioned underneath. The use of global trait EI scores may mask differential relationships between the trait EI facets and criteria, an important secondary topic that we could not address in this succinct review. Last, the data reviewed have been gathered with various measures of trait EI, which is methodologically undesirable, as briefly discussed later (for an up-to-date description and evaluation of EI-related instruments, see Siegling, Saklofske, & Petrides, 2015).

Location of Trait EI in Personality Factor Space

If trait EI constitutes a comprehensive representation of the affective aspects of personality (see Table 1), where is it located within established personality hierarchies, such as the Giant Three or Big Five? Locating trait EI in personality space is vital for connecting the construct to the mainstream personality literature. Petrides, Pita, and Kokkinaki (2007; see also Pérez-González & Sanchez-Ruiz, 2014) performed factor location studies, which indicated that trait EI is a *distinct* (because it can be isolated in personality space) and *compound* (because it is correlated with several higher-order personality dimensions) construct that lies at the *lower levels* of personality hierarchies (because the trait EI factor is oblique, rather than orthogonal, to the Giant Three and the Big Five). This conclusion enables us to connect our affective disposition conceptualization of EI to the literature on differential psychology, a major conceptual advantage that integrates the construct into established models of personality.

Trait EI theory is also relevant to the emerging body of work on the general factor of personality (GFP; Rushton et al., 2009). The fact that a GFP can be extracted from combined personality–trait EI datasets (Veselka, Schermer, Petrides, & Vernon, 2009) corroborates the view that the latter construct ought to be integrated into multilevel personality hierarchies, somewhere between the highly specific traits at their base and the broad general factor at their apex.

Biology of Trait EI

Findings from behavioral-genetic, neuroscientific, and neuroendocrinological research point towards a biological foundation of trait EI. Phenotypic correlations between trait EI and the Big Five personality dimensions are attributable, primarily, to correlated genetic factors and, secondarily, to correlated nonshared environmental factors (Vernon, Villani, Schermer, & Petrides, 2008). This means that many of the genes that are responsible for the development of individual differences in the Big Five are also responsible for the development of individual differences in trait EI. Related studies have estimated the heritable proportion of global trait EI at about 40%, which is very similar to the estimates obtained for other broad-bandwidth personality traits.

Table 1. The sampling domain of trait emotional intelligence in adults.

Global trait EI	High scorers perceive themselves as…
Well-being	
Self-esteem	…successful and self-confident.
Trait happiness	…cheerful and satisfied with their lives.
Trait optimism	…confident and likely to "look on the bright side" of life.
Self-control	
Emotion control	…capable of controlling their emotions.
Stress management	…capable of withstanding pressure and regulating stress.
Impulse control	…reflective and less likely to give into their urges.
Emotionality	
Emotion perception (self and others)	…clear about their own and other people's feelings.
Emotion expression	…capable of communicating their feelings to others.
Relationships	…capable of having fulfilling personal relationships.
Trait empathy	…capable of taking someone else's perspective.
Sociability	
Social awareness	…accomplished networkers with excellent social skills.
Emotion management (others)	…capable of influencing other people's feelings.
Assertiveness	…forthright, frank, and willing to stand up for their rights.
Adaptability*	…flexible and willing to adapt to new conditions.
Self-motivation*	…driven and unlikely to give up in the face of adversity.

Note. *These two facets feed directly into the global trait EI score without going through any factor.

Preliminary research suggests that trait EI has both structural and functional neurobiological correlates. Regarding the former, Bar-On, Tranel, Denburg, and Bechara (2003) reported that patients with lesions in areas associated with emotional processing, such as the ventromedial prefrontal cortex (vmPFC) and the amygdala, obtained lower trait EI scores. Kreifelts, Ethofer, Huberle, Grodd, and Wildgruber (2009) found that audio-visual integration is linked to trait EI within the right posterior superior temporal sulcus (pSTS). In neurotypical subjects, MRI studies revealed that trait EI correlates positively with grey matter volume (Tan et al., 2014) as well as with grey matter density (Takeuchi et al., 2011) in key emotion areas, such as the vmPFC. Takaeuchi et al. (2013) also found that trait EI is related to white matter

structural integrity (i.e., increased axonal caliber, increased myelin thickness, and increased fiber coherence in a given direction) of the right inferior longitudinal fasciculus, which connects the occipital lobe to several structures of the more anterior parts of the brain that are considered central for social and emotional cognition.

Research on functional neurological correlates suggests that trait EI is associated with neurological activity in both resting and active conditions. In resting conditions, electroencephalographic (EEG) studies have shown that trait EI scores are linked to electrophysiological cortical activity (e.g., Mikolajczak, Bodarwé, Laloyaux, Hansenne, & Nelis, 2010). They are specifically related to the level of asymmetry in the resting activation of frontal cortical areas of the brain, with higher trait EI individuals showing greater resting left frontal activation, which accords well with broader findings on frontal EEG asymmetry and emotion (Coan & Allen, 2004).

In active conditions, that is, during an emotionally provocative task involving the perception of fearful faces, Killgore and Yurgelun-Todd (2007) found that trait EI was negatively related to brain activity in adolescents. The authors interpreted this result as consistent with the neural efficiency hypothesis, which proposes that experts on a given task (in this case, high trait EI adolescents) will show reduced functional activation compared to novices. This dovetails with recent findings that participants who underwent EI-related training showed less activity than controls in various brain regions involved in emotion regulation and attention during an emotion regulation task (Hansenne, Nélis, Feyers, Salmon, & Majerus, 2014).

There is, by contrast, a paucity of research on the peripheral physiological effects of trait EI during resting and active states. The few available studies show, as hypothesized, that higher trait EI scores are associated with lower hypothalamic-pituitary-adrenal axis reactivity in stressful situations (Mikolajczak, Roy, Luminet, Fillée, & de Timary, 2007). Further research is needed to replicate and expand these findings. Overall, the biological correlates summarized before add to the large body of evidence showing that trait EI is neither a methodological artifact nor theoretically elusive, since it correlates with and predicts a gamut of very precisely operationalized criteria.

Applications of Trait EI

We now turn to illustrative applications of trait EI theory in clinical, health, social, educational, organizational, and developmental settings. According to trait EI theory, high scores are usually, but not always, adaptive and low scores are usually, but not always, maladaptive. For example, in Sevdalis, Petrides, and Harvey (2007), high trait EI scores were associated with greater mood deterioration, following the recall of a poor real-life decision, while in Petrides, Vernon, et al. (2011) they were associated with narcissistic tendencies. Ultimately, the desirability or otherwise of a particular trait EI profile will always depend on the context of the situation and the nature of the dependent variables.

Clinical

As confirmed by Martins, Ramalho, and Morin's (2010) comprehensive meta-analysis, trait EI is a strong positive predictor of well-being and mental health (see also Petrides, Pérez-González, & Furnham, 2007). In a longitudinal study of the transition from primary to secondary school, trait EI was a negative predictor of psychopathology, concurrently as well as prospectively (Williams, Daley, Burnside, & Hammond-Rowley, 2010). Also in adolescents, Mikolajczak, Petrides, and Hurry (2009) used probit regression analysis to estimate that the likelihood of self-harming is 75% if trait EI is below 2.47, 50% if trait EI is above 3.47, and only 25% if trait EI is above 4.50 (TEIQue-ASF scores, ranging from minimum 1 to maximum 7).

Trait EI is a strong negative predictor of psychopathology in adults too, including those with clinically diagnosed conditions, such as Asperger syndrome (Petrides, Hudry, Michalaria, Swami, & Sevdalis, 2011) and borderline personality disorder (Sinclair & Feigenbaum, 2012). Higher trait EI predicts lower stress, anxiety, and depression in young adults experiencing everyday life pressures (Martins et al., 2010), in older adults facing stressful circumstances (e.g., carers of relatives with dementia; Weaving, Orgeta, Orrell, & Petrides, 2014), and in athletes in competitive sports (Laborde, Brüll, Weber, & Anders, 2011). While most studies have reported that high trait EI is negatively linked to mood deterioration and psychological symptomatology in stressful circumstances, a study by Arora et al. (2011) reported that medical trainees with high trait EI experienced more stress when undergoing an unfamiliar surgical procedure, reiterating that the effects of the construct are often moderated by the situational context.

Health

Compared to mental and subjective health, the relationships of trait EI with objective indicators of health status remain underresearched. Mikolajczak et al. (2015) demonstrated in two studies (N_1 = 1,310 and N_2 = 9,616) that trait EI predicts incremental variance in healthcare use (including drug use, doctor consultations, and hospitalizations) over and above well-established predictors of health, such as age, gender, body mass index, education level, social support, and health behaviors (e.g., diet, physical activity, smoking, and drinking habits). Findings also showed that high trait EI beneficially moderates the impact of these risk factors on health.

Trait EI is linked to lower cortisol secretion in stressful situations (Laborde, Lautenbach, Allen, Herbert, & Achtzehn, 2014; Mikolajczak, Roy, et al., 2007), which is advantageous because high secretions over long periods may eventually lead to inflammatory and other somatic conditions (Tillmann, Krishnadas, Cavanagh, & Petrides, 2013). It also relates negatively to behaviors with deleterious health effects, such as smoking, drug use, and self-harming (Riley & Schutte, 2003; Schutte, Malouff, & Hine, 2011), but positively to health-promoting behaviors, such as physical activity and a healthy diet (Mikolajczak et al., 2015; Saklofske, Austin, Galloway, & Davidson, 2007).

Social and Interpersonal

Trait EI has been associated with self-reported and peer-rated prosocial behavior both in primary schoolchildren (Mavroveli & Sanchez-Ruiz, 2011) and in adolescents (Frederickson, Petrides, & Simmonds, 2012). This body of research shows that, in general, high trait EI facilitates prosocial, and inhibits antisocial, behavior. Pupils from different countries and age groups who score high on trait EI tend to receive more nominations from their classmates for being cooperative and having leadership qualities, and fewer nominations for being disruptive, aggressive, and dependent (e.g., Mavroveli, Petrides, Sangareau, & Furnham, 2009).

Substantial research looking into the links between trait EI and interpersonal relationships has been conducted in adults too. Characteristic findings include positive relationships with marital satisfaction, relationship quality, and constructive communication between partners, and negative relationships with detrimental communication patterns, like mutual avoidance and withholding (for a meta-analysis on EI and marital satisfaction, see Malouff, Schutte, & Thorsteinsson, 2014).

Last, Gugliandolo, Mavroveli, Costa, Cuzzocrea, and Larcan (2016) found a positive link between trait EI and favorable parenting practices, as reported by adolescents, like parental involvement, autonomy support, and warmth. In a similar study, lower scores on adolescent-reported parental psychological control (i.e., less intrusion into the psychological and emotional world of the adolescent and less manipulative obstruction of thoughts, feelings, and behaviors) were related to higher trait EI in adolescents. This, in turn, mediated the relationship between parental control and externalizing and internalizing problems (Gugliandolo, Costa, Cuzzocrea, & Larcan, 2015).

Educational and Vocational

Trait EI is associated, directly or indirectly, with multiple variables in educational contexts. For example, high trait EI pupils tend to have fewer unauthorized absences than their low trait EI peers, are less likely to have been expelled from school due to rule violations (Mavroveli, Petrides, Shove, & Whitehead, 2008), and score higher on certain measures of creativity (Sanchez-Ruiz, Hernández-Torrano, Pérez-González, Batey, & Petrides, 2011). Trait EI also plays a role in children's peer relations at school, having been linked to a lower likelihood of aggressive and delinquent behaviors (e.g., Santesso, Reker, Schmidt, & Segalowitz, 2006).

Most trait EI research in education has focused on the construct's relationship with academic performance. A recent meta-analysis revealed that high trait EI may confer a performance advantage, of variable strength, in primary, secondary, and tertiary education (Perera & DiGiacomo, 2013; see also Sanchez-Ruiz, Mavroveli, & Poullis, 2013). Overall, the emerging picture suggests that the construct's impact on academic achievement is modest and likely to be more relevant to specific groups of children (for a comprehensive review, see Mavroveli & Sanchez-Ruiz, 2011). While the literature has mainly emphasized the importance of trait EI for low IQ children (Agnoli et al., 2012), the construct seems to have relevance for gifted pupils too (Brasseur & Grégoire, 2010).

Another area of education-related applications concerns career and vocational choices. There are reliable differences in the trait EI profiles of students in different university departments (e.g., arts students score higher on the emotionality factor of trait EI than technical studies students; Sanchez-Ruiz, Pérez-González, & Petrides, 2010). In addition, the construct has been linked to career-related decision-making (Di Fabio & Saklofske, 2014) as well as to career adaptability (Coetzee & Harry, 2014). This body of research indicates that trait EI should be given serious consideration in vocational psychology as well as in the practice of career guidance and coaching.

Organizational

Trait EI predicts key outcomes in the workplace. Arguably, the most robust evidence comes from meta-analyses confirming strong positive effects on job performance (e.g., O'Boyle, Humphrey, Pollack, Hawver, & Story, 2011). Another effect concerns the relationship between trait EI and work-related well-being. Several studies show that trait EI is positively related to job satisfaction and flourishing (Schutte & Loi, 2014) and negatively related to job stress and burnout (Mikolajczak, Menil, & Luminet, 2007).

Research has also uncovered a consistent relationship between trait EI and leadership behavior and skills (Walter, Cole, & Humphrey, 2011). Managers with higher trait EI scores are preferred by their employees (Furnham, McClelland, & Mansi, 2012), who tend to be more satisfied (Zampetakis & Moustakis, 2010) and less stressed (Mikolajczak, Balon, Ruosi, & Kotsou, 2012). Finally, trait EI also correlates with organizational variables of broader significance, such as entrepreneurial behaviors (Ahmetoglu, Leutner, & Chamorro-Premuzic, 2011), work engagement (Akhtar, Boustani, Tsivrikos, & Chamorro-Premuzic, 2015), and counterproductive work behaviors (Jung & Yoon, 2012).

Future research in the organizational domain could examine the role of trait EI in jobs that are heavy in emotional labor. It will also be beneficial to propose and test specific mechanisms through which trait EI affects organizational variables, particularly job performance. We believe this task should be given priority over research on incremental validity, which has been yielding strong positive findings even with short measures of the construct (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016).

Trait EI in Childhood

Trait EI is less well understood in childhood. Mavroveli et al. (2009; Mavroveli et al., 2008) undertook a systematic content analysis of the literature on emotional and social development with a view to establishing the sampling domain of the construct in children (see Table 2) and developing a measure to assess it. Based on an Italian translation of this measure, Russo et al. (2012) reported that the factor structure of trait EI in early

Table 2. The sampling domain of trait emotional intelligence in children.

Facets	Brief description	Example items
Adaptability	Children's perceptions of how well they adapt to new situations and people.	"I find it hard to get used to a new school year."
Affective disposition	Children's perceptions of the frequency and intensity with which they experience emotions.	"I'm a very happy kid."
Emotion expression	Children's perceptions of how effectively they can express their emotions.	"I always find the words to show how I feel."
Emotion perception	Children's perceptions of how accurately they identify their own and others' emotions.	"It's easy for me to understand how I feel."
Emotion regulation	Children's perceptions of how well they can control their emotions.	"I can control my anger."
Impulse control	Children's perceptions of how effectively they can control themselves.	"I don't like waiting to get what I want."
Peer relations	Children's perceptions of the quality of their relationships with their classmates.	"I listen to other children's problems."
Self-esteem	Children's perceptions of their self-worth.	"I feel great about myself."
Self-motivation	Children's perceptions of their drive and motivation.	"I always try to become better at school."

childhood is unidimensional, with an eventual differentiation into two interrelated dimensions (emotion control and socioemotionality) as children move towards late childhood and preadolescence.

While the long-term patterns of continuity and change in trait EI remain largely unexplored, a study by Keefer, Holden, and Parker (2013) suggested that profiles become partially stable at age 10–11 and fairly invariant from 12–13 to 17–18 years. Concerning possible antecedents, Gardner, Qualter, and Whiteley (2011) found that temperament, but not childhood traumas or family environmental factors, was predictive of trait EI scores, thus supporting the conceptualization of the construct as mainly intrinsically determined.

Drawing on research from children samples, it is clear that the foundations of the multifaceted role of trait EI in the life domains covered in the previous lines are laid down in childhood. In general, high trait EI scores are conducive to adaptive behaviors in childhood and adolescence, like socioemotional competence (Frederickson et al., 2012), and inhibitory to maladaptive behaviors, like bullying, victimization, and psychopathology, broadly defined (Kokkinos & Kipritsi, 2012; Williams et al., 2010).

Trait EI Training in Adults

Because of its relevance to people's well-being, health, relationships, and work performance, researchers and practitioners alike have wondered if anything can be done to change trait EI profiles in adulthood. Approximately 50 studies have been conducted to determine whether or not trait EI scores improve after EI training (Pérez-Gonzaléz, Botella, & Mikolajczak, 2016). About 90% of these studies concluded in the affirmative, but most suffered from important methodological limitations (e.g., no control group or small sample sizes). From the few well-conducted studies (for a review, see Mikolajczak & Pena-Sarrionanda, 2015), the average improvement, as reflected in TEIQue or EQ-i scores, seems to be about 12% (in self-reports) or 6.6% (in reports by spouses or friends). It appears that trait EI is amenable to change, and that this change may lead to concomitant improvements in some of its correlates (thereby suggesting that trait EI is causally linked to these correlates). These changes are evident after a few weeks of training and are maintained for at least 1 year subsequently (Kotsou, Nelis, Gregoire, & Mikolajczak, 2011).

The first and foremost benefit of trait EI training is enhanced mental well-being: EI training leads both to a drop in psychological problems (e.g., burnout and distress) as well as to an increase in happiness, life satisfaction, and quality of life (Nelis et al., 2011; Vesely, Saklofske, & Nordstokke, 2014). The second benefit is an improvement in self-reported physical health, which is also reflected in biological changes, such as a 14% drop in diurnal cortisol secretion in Kotsou et al.'s (2011) study and a 9.7% drop in glycated hemoglobin in Karahan and Yalcin's (2009) study. The third documented benefit is improved quality of marital and social relationships (Kotsou et al., 2011), with a strong agreement between participant and spouse (or friend) reports.

Future Directions

Future research would do well to minimize the literature's reliance on a motley assortment of trait EI measures. Results from this mélange of measures can be meaningfully interpreted only from the centripetal perspective of trait EI theory, which is the adhesive element of this review, but which is not consistently, or indeed correctly, applied across the relevant studies, In any event, this unwarranted methodological plurality exerts a destabilizing influence on the construct's nomological net, most especially at the facet level that was outwith the remit of this review (Siegling et al., 2015).

Emotions are subjective experiences permeating every area of our lives. Naturally, their importance and ubiquity means that they have been approached and studied from a wide variety of angles. The resultant explosion in theories, methodologies, and research has created a literature that is becoming increasingly fragmented and compartmentalized. Trait emotional intelligence (trait emotional self-efficacy) theory bucks the trends of fragmentation and compartmentalization by offering a centralizing framework within which to synthesize data accruing from disparate approaches and diverse spheres of research activity and practice. This short article provides a glimpse of the research activity currently unfolding across multiple domains, and reiterates the

availability of a general theory of personality that can provide an integrative account of human behavior and experience.

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