# Intelligence, Emotional☆

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## Glossary

**360-degree assessment** An assessment in which a number of people who know an individual answer questions about that individual's attitudes, ability, or behavior; in the workplace, the raters are usually the individual's supervisors, peers, and subordinates.

**Ability emotional intelligence** A construct positing the existence of quantifiable cognitive differences in the ways in which typically developed individuals attend to, experience, process, and utilize emotions. The fundamental challenge with ability EI is the inherently subjective nature of emotion, which complicates objective measurement using veridical scoring criteria (as in IQ tests).

**Cognitive abilities** Mental faculties that involve the acquisition, analysis, and categorization of information as well as reasoning and problem-solving.

**Competency** A learned capability that contributes to superior performance.

**Conative abilities** Having to do with motivation as opposed to emotion or cognition.

**Trait emotional intelligence** A constellation of emotional self-perceptions located at the lower levels of personality hierarchies. The construct essentially concerns people's perceptions of their emotional abilities.

**Tipping point** A point in the linear relationship between two variables at which an additional small increase in the first variable results in a sharp increase in the second variable.

## Why the Interest in Emotional Intelligence?

For more than 100 years, psychologists have been trying to identify, measure, and modify those aspects of personality and behavior that most strongly affect a person's ability to adapt successfully to the demands of living. Many of these efforts have focused on cognitive ability, that is, the way in which one acquires, codes, stores, and retrieves information about the environment. However, no matter how one measures cognitive ability, the amount of variability in outcomes attributable to it always proves to be rather limited. Estimates vary depending on the nature of the task and context, but cognitive ability, as measured by intelligence quotient (IQ) tests or other tests of general mental ability, usually accounts for only a small or moderate percentage of variability in performance outcomes. That percentage tends to be higher for criteria that are technical and specific (eg, academic achievement and task performance) and lower for criteria that are broad and experiential (eg, charisma and contentment). In addition, many tests of cognitive ability turn out to be culturally biased and perpetuate discrimination against various groups within society.

The significant, but ultimately limited, role of cognitive ability in helping people to adapt successfully has led to several attempts to identify other kinds of constructs that contribute to success in life. Emotional intelligence (EI) represents one such set of constructs.

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## Historical Roots of and Precursors to the Concept

Even before psychologists began to measure intelligence, Darwin wrote about the adaptive importance of emotion in human and animal life. In 1872, he published a book in which he proposed that emotions serve two important survival and adaptive functions. First, they energize and motivate activity. Fear, to take an obvious example, helps one to be more vigilant and, when danger is spotted, to run faster from it. Second, emotions also serve a signaling function, conveying important information from one animal in a group to others. If an elk, grazing in a herd, notices a mountain lion off in the distance, the elk's fear reactions alert the rest of the herd, and the entire herd quickly sets off in flight, helping the elk to survive and pass on their genes to the next generation.

As early as 1920, some of the pioneers in the study and measurement of intelligence recognized the need to move beyond purely cognitive-based abilities in their conceptions and to include other kinds of abilities. Thorndike, for instance, wrote about "social intelligence" in an article published in 1920. In 1943, Wechsler wrote that "nonintellective" factors or "affective and conative abilities" should be considered part of general intelligence, based on their capacity to facilitate intelligent behavior. During the early 1980s, Gardner developed his concept of "multiple intelligences," which included "intrapersonal" and "interpersonal" intelligence as well as the more traditional cognitive-based types. Around the same time, Sternberg began to write about "practical intelligence."

There is another stream of activity in psychology that was highly relevant to the history of EI, even though it has not been explicitly linked to intelligence per se. For decades, personality and social psychologists had been studying personal attributes that seemed to help people be more effective in a variety of contexts, and some of these attributes involved one's ability to perceive, express, or manage emotions in oneself and in others. For instance, there was research on empathy, defined as the ability to sense what others are feeling and to take their perspective, suggesting that both children and adults who scored higher in this quality tended to be more successful in both vocational and academic contexts. Similarly, there was research suggesting that awareness of one's emotional reactions and what triggers them can have a great impact on emotion regulation, which, in turn, affects well-being and success. Current research and applications relating to EI draw on all of these historical roots.

## Prominent Models of Emotional Intelligence

As a term, "emotional intelligence" had been around since at least the 1960s, although the actual ideas encompassed by the various EI definitions go back to antiquity as can be surmised from this well-known quote by Aristotle "Anybody can become angry—that is easy, but to be angry with the right person and to the right degree and at the right time and for the right purpose, and in the right way—that is not within everybody's power and is not easy." Today, there are several salient models in the literature, the most prominent of which are the ability EI model and the trait EI model. Although there are important differences among the models, there are also many similarities. In fact, there is arguably as much consensus about the EI construct as there is about the concept of general intelligence, a topic that has certainly seen its own share of conflict and controversy.

Salovey and Mayer called their model an "ability" model. Using a deductive approach, they identified four branches that are related in a hierarchical way: (1) the ability to perceive emotions accurately, (2) the ability to use emotions to facilitate thought, (3) the ability to understand emotions, and (4) the ability to manage emotions.

Another popular model, especially in business settings, is Daniel Goleman's, which comprises four components: self-awareness, social awareness, self-management, and relationship management. These four basic components are subsequently linked to 20 distinct competencies. For example, under the Self-Management dimension, there are competencies, such as flexibility and initiative. Goleman stressed that these competencies are learned capabilities that contribute to superior performance, but are not the same as EI, although the latter provides the foundation for them.

A third model that has attracted considerable attention is Reuven Bar-On's EQ model, which also is competency-based. Bar-On's model comprises five dimensions: (1) Intrapersonal EQ, which includes competencies like emotional self-awareness and assertiveness; (2) Interpersonal EQ, which includes empathy and interpersonal relationships, among others; (3) Stress Management, which includes stress tolerance and impulse control; (4) Adaptability, which includes flexibility, reality testing, and problem solving; and (5) General Mood, which includes optimism and happiness.

The final salient model in the literature is K.V. Petrides' trait EI model, which re-conceptualizes EI as a constellation of emotional perceptions, rather than an IQ-type or competency variable. Trait EI is currently the only definition that recognizes the inherent subjectivity of emotional experience. That the trait EI facets are personality traits, as opposed to mental abilities or competencies, is also corroborated by research revealing that the same genes that are implicated in the development of individual differences in the Big Five personality traits are also implicated in the development of individual differences in trait EI. The 15 constituent elements (ie, the sampling domain) of trait EI are presented in Table 1, while Table 2 sumaarizes the differences between the trait and ability EI models.

## Measurement of Emotional Intelligence

Measures for various aspects of EI have existed for a long time. For instance, there are measures of empathy that can be used to assess one's ability to perceive another person's mood or emotional response. Similarly, there are measures of emotional self-awareness and self-regulation. However, during the past 20 years or so, there has also been a concerted attempt to develop and refine

**Table 1** The sampling domain of trait emotional intelligence in adults and adolescents

| | *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. |
| **Independent facets[a]** | |
| Adaptability | …Flexible and willing to adapt to new conditions. |
| Self-motivation | …Driven and unlikely to give up in the face of adversity. |

[a]These two facets feed directly into the global trait emotional intelligence score without going through any factor.

**Table 2** Trait EI versus ability EI

| Construct | Measurement | Conceptualization | Expected relationship to g | Construct validity | Example measures[a] |
|---|---|---|---|---|---|
| Trait EI | Self- and other-reports. | Personality trait. | Orthogonal. Unimportant for construct validity. | Discriminant and incremental validity vis-à-vis personality. Concurrent and predictive validity with many criteria. | EQ-i SEIS TEIQue |
| Ability EI | Performance-based, but with atypical scoring procedures. | Cognitive ability. | Moderate-to-strong correlations. Crucial for construct validity. | Small-to-moderate correlations with verbal IQ. Limited concurrent and predictive validity. | MSCEIT STEM/STEU |

[a]Abbreviations as in **Table 3**.

instruments explicitly designed to measure all of the major facets of EI. Siegling et al. (2015) present a thorough review and evaluation of current ability and trait EI measures.

### Measurement of Ability EI

The most prominent measure of ability EI is the Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT; Mayer et al., 2003) although a number of alternatives have been developed more recently. Because these tests adopt different methodologies in order to address the task of creating items with emotional content that must be scored objectively, it is difficult to evaluate them as a single class of instruments.

Broadly speaking, the main challenge that ability EI tests have to tackle is the inherent subjectivity of emotional experience. Unlike standard cognitive ability tests, tests of ability EI cannot be objectively scored because, in the vast majority of emotion-related domains, there are no clear-cut criteria for what may constitute a veridical response. Ability EI tests have tried to bypass this problem by employing alternative scoring procedures, which had previously been used for addressing similar challenges in the operationalization of social intelligence, but without marked success.

Unconventional procedures, such as "consensus" and "expert" scoring, attempt to create "correct" responses among a number of equally logical alternatives, but yield scores that are not easily interpretable psychologically. Indeed, it has been pointed out that it is unclear whether such scores reflect confounding with vocabulary, conformity to social norms, theoretical knowledge about emotions, stereotypical judgments, or some unknown combination of these factors.

In the MSCEIT, an individual performs a number of tasks designed to test various aspects of EI. For instance, in one section of the test, the individual is shown a series of faces and must rate how much sadness, anger, jealousy, and the like are displayed in each

one. This section is designed to assess the Perception of Emotion dimension. The MSCEIT is viewed as a comprehensive measure of ability EI, since it is based on the developers' four-branch model. Other tests, such as the STEU, and STEM are measures of specific aspects of ability EI (eg, emotion understanding and emotion management) and depart from the MSCEIT in their measurement and scoring methodologies.

### Measurement of Trait EI

It is argued that the measurement of EI via self- and observer-reports is more straightforward because these methodologies are consistent with the subjective nature of emotional experience. Trait EI measures have generally avoided the pitfalls of ability EI assessment and are more widely used both in the scientific literature and in practical applications. In general, they have higher internal consistencies, more stable factor structures, and are grounded on established psychometric and mathematical models. Meta-analyses have shown that measures of trait EI outperform measures of ability EI by large margins.

On the negative side, self-report measures have often neglected the theoretical aspects of construct operationalization. In fact, many authors continue to claim that such measures actually assess mental abilities, competencies, or skills, and interpret their results accordingly. This psychometrically untenable tendency has softened over the years as trait EI theory has gained prominence in the literature. Table 3 presents a summary of the properties of six salient trait EI measures.

### The Relationship Between Emotional Intelligence and Personality

One of the early controversies surrounding the concept of EI (especially trait EI) concerned whether it was simply a new name for a set of personality traits that have been studied often in the past. Empirical research has addressed this issue by examining the strength of the relationship between common measures of EI and various personality traits. Most attention has focused on the relationship between EI and the Five-Factor Model of personality. Andrei et al. (2016) conducted a systematic review and meta-analysis to synthesize the literature examining the incremental validity of the two adult self-report forms of the Trait Emotional Intelligence Questionnaire (TEIQue). The results suggested that the TEIQue consistently explains incremental variance in criteria pertaining to different areas of functioning, beyond higher-order personality dimensions and other emotion-related variables. The pooled effect size was relatively small, but statistically and practically significant ($\Delta R2 = 0.06$, SE = 0.0116; 95% CI [0.03, 0.08]). The number of covariates controlled for, the form of the TEIQue, and the focus on higher-order personality dimensions versus other individual-differences constructs as baseline predictors did not affect the size of the effect.

A separate, but related, line of research has sought to identify the location of ability and trait EI in personality factor space. In a large meta-analysis, van der Linden et al. (2016) extracted a General Factor of Personality (GFP) from the Big Five dimensions of personality, and examined its relationship with various EI measures. Based on a total sample of k = 142 data sources ($N = 36\ 268$) the two major findings from the meta-analysis were (1) a large overlap between the GFP and trait EI ($r \approx 0.85$), (2) a positive, but less strong, correlation with ability EI ($r \approx 0.28$). It was concluded that the GFP is a factor of generalized socioemotional effectiveness that shares the vast majority of its variance with trait EI.

### The Contribution of Emotional Intelligence to Health, Work, and Educational Adjustment

There is considerable research showing that EI has an impact on educational, health, and work outcomes. The research comes from two main sources. First, there are studies that have used one of the explicit measures of EI. Van Rooy and Viswesvaran's meta-analysis found that, across all studies and measures, the correlation between EI and work performance was 0.24. For academic performance, the relationship was weaker at $r = 0.10$. As is often the case with meta-analyses, the strength of the relationship varied considerably, depending on the context of the study and the measures used. For instance, studies using an ability measure of EI developed by Salovey and Mayer found a correlation of 0.32 between EI and performance, whereas researchers using the EQ-i published canonical correlations between EI and occupational performance as high as 0.74.

Another source of research on the links between EI and important outcomes are the many studies that have examined specific facets of EI during the past half-century or so. Such research has shown, for instance, that awareness of one's own emotional reactions plays a vital role in stress regulation, anger management, and other processes that affect both physical and behavioral health. Emotional self-regulation plays an even greater role in health outcomes and also is a strong predictor of success in school and the workplace. Similarly, empathy (ie, the ability to perceive emotions in others) has been shown to predict academic and vocational adjustment and to provide the foundation for positive social relationships that contribute to physical and behavioral health in various ways.

Most of the research on the links between EI and important outcomes probably underestimates the construct's significance because researchers typically look only at simple linear relationships. However, there is research and theory suggesting that the relationship between EI and certain health and performance outcomes is more complex. For instance, Goleman suggested that EI is especially important in determining which individuals, among those occupying a particular role in an organization or occupation, will become superior performers or "stars." Research on competence in work organizations summarized by McClelland in 1998 tends to support this view. Also, McClelland and his students showed that there tend to be "tipping points" in the relationship

**Table 3** Summary properties of salient measures of trait EI

| Measure | Authors | Reliability $\alpha$ | Reliability test-retest | Predictive validity | Incremental validity | Convergent/discriminant validity | Factor structure |
|---|---|---|---|---|---|---|---|
| *TMMS*. Trait Meta Mood Scale | Salovey et al. (1995) | 0.70–0.85 | Between 0.60 and 0.83 over 4 weeks | Depression, mood recovery, goal orientation | Unclear | Moderate correlations with the big five | 3 factors, but no global score |
| *EQ-i*. Emotional Quotient Inventory | Bar-On (1997) | Generally good (about 0.85) | Good | Mental health, coping, work and marital satisfaction | Some evidence vis-a-vis the big five | Moderate to high correlations with the Big five | Unclear |
| *SEIS*. Schutte Emotional Intelligence Scales | Schutte et al. (1998) | 0.70–0.85 | 0.78 over 2 weeks | Social support, life and marital satisfaction, depression, performance on cognitive tasks | Some evidence vis-a-vis the Big five | Medium-to-high correlations with the Big five | Unclear (3 or 4 factors), global score |
| *ECI*. Emotional and Social Competence Inventory | Boyatzis et al. (1999) | 0.70–0.85 for global score >0.85 for social skills | Adequate, but based on small samples | Moderate correlations with managerial styles and organizational climate. Low correlations with career success | Unclear | Unclear (small samples); uncorrelated with critical thinking and with analytical reasoning | Unclear (4 factors?) |
| *TEIQue*. Trait Emotional Intelligence Questionnaire | Petrides (2001). | Generally good (about 0.85) | Good (0.50–0.82; global score 0.78; 12-month period) | Mental health (depression, personality disorders, dysfunctional attitudes), adaptative coping styles, job stress, job performance, organizational commitment, deviant behaviour at school, sensitivity to mood induction | Strong vis-a-vis Giant three, big five, and positive and negative affect | The TEIQue can be isolated in Giant three and Big five factor space | 4 factors, global score |
| *WLEIS*. Wong & Law Emotional Intelligence Scale | Wong and Law (2002) | 0.70–0.85 | Unclear | Job performance and satisfaction. Organizational commitment, turnover intention | Unclear | Small negative correlations with IQ | 4 factors, global score |

Note: Information in this table is necessarily succinct and readers are urged to consult the original sources for specific details. Entries designated 'unclear' indicate conflicting evidence or lack of adequate data. All TEIQue forms and versions are available, free of charge, for research purposes from www.psychometriclab.com.

between emotional competencies and performance. This means that up to a certain level of competence, increases in competence do not result in significant increases in performance; however, once the level of competence passes a tipping point, there is a sharp increase in performance. Such complex relationships could suppress the strength of simple correlational and regression estimates.

In a wide-ranging review of the trait EI literature, Petrides et al. (2016) presented evidence from multiple studies showing that the construct predicts important outcomes in the areas of clinical (eg, psychopathology and self-harming), developmental (eg, socio-emotional competence and bullying), educational (eg, academic performance and truancy), health (eg, doctor consultations and hospitalizations), organizational (eg, job performance and organizational commitment), and social (eg, peer-relations and marital satisfaction) psychology. Recent research has also been pointing to an important role of trait EI in medical contexts (eg, cancer and inflammatory diseases).

## Can Emotional Intelligence Be Taught?

At least since Freud's early work in psychoanalysis, psychotherapists of various orientations have been teaching their patients to become more aware of their emotional responses, to develop greater understanding of their emotions, to perceive the feelings of others more accurately, and to regulate their own emotions more effectively. Similarly, since the beginning of civilization, parents and teachers have been helping children to better understand and control their emotions and those of others. If these efforts had not been effective, civilization as we know it probably could not exist. Thus, it seems obvious that EI can be taught.

However, less obvious is the question of how EI can best be taught and how much change an intentional intervention can actually bring about in children or adults. The evidence suggests that EI can be taught, but that the process is more time-consuming and difficult than many self-appointed gurus, teachers, and trainers often suggest. Perhaps the clearest indication that EI can be taught comes from efforts to help people manage their emotions. Recent research on stress and anger management programs suggests that methods are now available to help many people who have problems with emotion regulation. There have also been experimental procedures developed to help people become more aware of others' emotions and to identify those emotions more accurately. Moreover, a number of applied psychologists have developed educational curricula and teaching methods that seem to be effective in helping many children to develop social and emotional competence.

Unfortunately, all of these intervention strategies require a highly favorable context to be effective for many individuals. First, and most important, the individual usually must be highly motivated and willing to devote considerable time and energy to the change effort. Second, the teacher or trainer must have a high degree of skill, particularly in the social and emotional domains, to be helpful. Third, the social environment needs to provide support and encouragement of various kinds. When all of these critical ingredients are present, carefully designed and implemented interventions can help children and adults optimize their emotional intelligence.

Specifically with respect to trait EI, which, importantly, benefits from behavioral genetics research, about 40% of its variance can be attributed to genetic factors, which is in line with the heritability estimates obtained for other major personality dimensions. Hitherto, approximately 50 studies have been conducted to determine whether or not trait EI scores change after training. About 90% of these studies concluded in the affirmative, but most suffered from important methodological limitations (eg, no control groups or small sample sizes). 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.

## Further Reading

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