11

Why Emotional Intelligence Needs a Fluid Component

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There is something intuitively appealing and "right" about the idea of emotional intelligence (EI), but what is that something? Before we can answer this question, and especially before we raise issues about what exactly the construct of EI is or ought to be and the problem of how to measure it, it will be helpful to address the question of how to characterize the presupposed notion of "emotion." There is much disagreement among emotion theorists as to exactly what emotions are (and even as to which psychological conditions are emotions), and insofar as different theorists have different conceptions of what an emotion is, their instincts as to what EI is are likely to be different. Certainly this is the case with respect to our own conception of EI as compared to the one introduced, elaborated, and extensively investigated by Mayer and Salovey and their colleagues (e.g., Mayer & Salovey, 1995, 1997; Salovey & Mayer, 1990). We believe that differences in conceptions of EI ultimately come to rest in different conceptions of emotions. Once we have addressed the question of what an emotion is, we review Mayer and Salovey's construct of EI and its measurement, suggesting that, at least in principle, both could be strengthened by introducing an additional, critical, ingredient.

What Is an Emotion?

We view emotions as states that result from value-laden appraisals of a person's environment. Of course, this is a very broad, general statement, and it turns out to be

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not so easy to reach consensus on a more specific characterization. Some theorists (e.g., Ortony, Clore, & Collins, 1988; Roseman, 1984; Scherer, 1984) focus on what one might call the "input" side of emotions by attending to the cognitive and perceptual aspects. Others (e.g., Frijda, 1986) devote more attention to the "output" side by concentrating on action tendencies. Yet others (e.g., Ekman, 1982; Izard, 1971) have undertaken extensive studies of the facial expressions of emotions. Finally, the rapidly expanding field of affective neuroscience reflects a growing interest in the brain structures and mechanisms that underlie emotion processes (e.g., Lane & Nadel, 2000; LeDoux, 1996; Panskepp, 1998). These different approaches are best thought of as representing emphases on different aspects of emotion rather than as competing theories of emotion. Viewing them in this way allows for the possibility of finding a characterization of emotion that is compatible with all of them.

Our attempt at such a characterization is illustrated in Figure 11.1. We suspect that most emotion theorists would agree that under normal conditions, emotions have the components indicated in the figure, namely, a *somatic component* having to do with the feeling of bodily disturbance or change (we think of this as "raw" affect), a *cognitive component* wherein the emotion-inducing aspects of the environment (including the "internal" environment of memories, representations of bodily and mental states, etc.) are (often consciously) appraised and "made sense of," and a *motivational component* comprising the inclinations to act (or not act). In addition, each of these three components has associated with it (observable) *behavioral manifestations*, ranging from fully automatic "behaviors," such as flushing or grimacing, to complex planful acts such as taking revenge for a perceived harm. Finally, the interaction of the three components and their behavioral manifestations gives rise to an integrated holistic phenomenological *experience* of emotion, represented in the figure by the central "experiential whole."

With respect to emotion theory in general, the virtue of a model of this kind is that it can accommodate both the similarities and differences among the various proposals found in the literature. With respect to the issue of EI in particular, its value is that it forces us to develop an account of EI that does justice to some of the basic facts about emotions. These basic facts, simply put, are that an emotion is normally *an experience that involves bodily feeling, thinking, wanting, and doing*. These aspects are all represented in the model, but not, we think, in the account of emotion upon which Mayer and Salovey appear to base their conception of EI.

Consider how the model plays out in the case of, say, a person walking across a deep gorge on a shaky suspension bridge. In order for an effectively functioning individual to get across, the four ingredients or "modes" of what we (Ortony, Norman, & Revelle, 2005) call "effective functioning" need to work in concert. These modes—affect, cognition, motivation, and behavior—are analogous but not identical to the four components of emotions just described, namely, the somatic, cognitive, motivational, and behavioral.[1] From the effective functioning perspective, the affective mode for our hesitant bridge crosser is an emotional state of (high) anxiety (pun intended). From the emotion perspective, his fear or anxiety has its own internal structure, including such bodily (somatic) feelings as a tensing of the body and a pounding heart. From

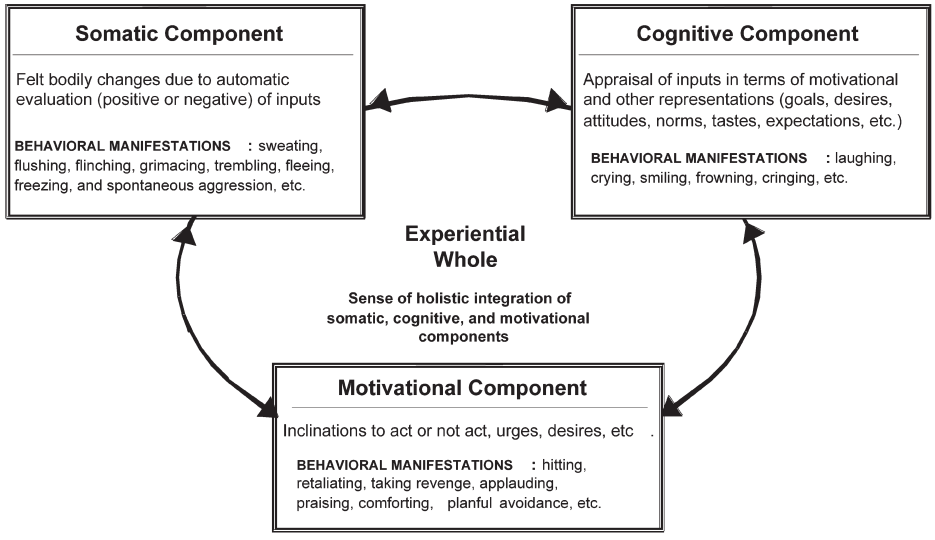

Figure 11.1. The components of a typical, "full-fledged" emotion

the effective functioning perspective, the would-be bridge crosser, like the proverbial chicken, is motivated to get to the other side, but from the emotion perspective, his fear incorporates an opposing motivation, namely the inhibitory motivation to avoid crossing the bridge. The attendant cognitions are equally complex and include things like a belief in the utility of getting to the other side and the knowledge that there's a risk of falling, with painful and perhaps even fatal consequences. All of these features, along with their tensions, have to be resolved and integrated if the resultant behavior is to be in the service of effective functioning (e.g., successfully crossing the bridge).

One can see from this example how optimal functioning is likely to be enhanced by some (albeit not excessive) level of emotion. A modicum of fear will increase vigilance and care, and thus help protect the person from the potentially disastrous consequences of carelessness. Excessive fear, on the other hand, is likely to be as dysfunctional as fearlessness. In general, and as we will discuss later, of particular importance in the context of EI, *optimal functioning requires an optimal level of affect.*

In contrast to our view of emotions as the product of value-laden appraisals, Mayer and Salovey take a rather different tack, apparently equating emotions with emotional relationships. Specifically, they claim that emotional information is information about (aspects of) relationships. However, it is not clear what exactly they mean in saying this. Presumably they do not intend "relationships" to be taken in a weak sense, for that sense tells us little about what emotions are (or what emotional information is). In the weak sense, most things are (ultimately) about relationships—color is about the relation between objects and reflected light, distance is about the relation between two points, intelligence is about the relationship between people and problems, and so on. If, on the

other hand, we take "relationships" to mean *interpersonal* relationships, which we suspect is what Mayer and Salovey have in mind, then we are faced with the problem that emotions often arise without the involvement of others. Again, to take the example of the person crossing the shaky bridge, by hypothesis, that person would be quite scared, but presumably there would be nothing *interpersonal* about his fear.

The source of Mayer and Salovey's focus on relationships is the fact that emotions *frequently* occur in relationships. However, frequency is not necessity: The fact that emotions frequently arise in relationships does not mean that they always or necessarily do, and thus it does not entail that "emotional information is information about [certain forms of these] relationships" (Mayer, Salovey, Caruso, & Sitarenios, 2001, p. 234). It might be, sometimes, but it need not be.

Mayer and Salovey's Construct of EI

It is our contention that Mayer and Salovey's emphasis on emotions and emotional information as being about relationships has problematic consequences for their construct of EI because it takes the focus off what goes on *inside* the individuals in those relationships. In fact, we think that their definition of EI as "the ability to *recognize* the meanings of emotions and their relationships and to use them as a basis in *reasoning* and problem solving" (italics added) (Mayer, Salovey, Caruso, & Sitarenios, p. 234), with its emphasis on recognizing and reasoning provides some evidence for our contention. These two (cognitive) abilities—recognizing and reasoning—become the basis for operationalizing their construct of EI as *perceiving*[2] emotions and emotional relationships and using them for *facilitating thinking* (i.e., to use them in reasoning).

We are cognitivists, so it is perhaps ironic that we find this account of EI to be a little too cognitive![3] But given our componential view of emotions in which emotions involve somatic, cognitive, motivational, and behavioral constituents, our own conception of EI is one that necessarily involves not only the ability to perceive and reason about emotions and emotional reactions, but also *the ability to experience emotions* (in contextually appropriate ways). That is, it involves *all* of the components of emotions that we laid out in the previous section. Thus our concern is that the Mayer and Salovey account tends to neglect the "experiential whole" and the contribution of, especially, the motivational and somatic components to that whole. By focusing on the admittedly important role in EI of recognizing, perceiving, and thinking about and with emotions, it is easy to lose sight of the possibility that a critical part of EI has to do with the ability to appropriately *experience* emotions in their full richness.

But matters are not so simple—some things are easier said than done. A consequence of insisting that emotional experience is a crucial aspect of EI is that the task of measuring EI becomes even more difficult than it already is, and unlike us, Mayer and Salovey and colleagues were constrained by the practical problems of devising a measure. Measuring emotional experience is a daunting challenge, especially given the fact that the most intuitively appealing route to doing it, namely using physiological correlates, does not

appear to be a promising approach. Emotion theorists are in fair agreement that discrete emotions cannot be finely differentiated on the basis of physiological "signatures." There is little convincing evidence of a one-to-one relationship between discrete emotions and associated patterns of physiological activity (but see Ekman, Levenson, & Friesen, 1983), even though such patterns, as well as those of arousal and brain activation, can be found at grosser levels of affect-related phenomena (e.g., approach and avoidance motivation are associated with somewhat distinct patterns of brain activation; Davidson, 1992; Fox, 1991). However, if one's ultimate goal is to develop a valid measure of EI, the fact that there are serious practical problems associated with measuring all of the constituents of emotion does not reduce the desirability of doing so. It remains true that to the extent that what we call "full-fledged" emotions—as opposed to generalized, undifferentiated affect—involve the integration of somatic, cognitive, motivational, and behavioral components into an experiential whole, and to the extent that integration of this kind is part of EI, then ideally a measure of EI should assess people's ability to effect such integration.

Mayer and Salovey's Measure of EI: The MSCEIT

So far we have noted that there seems to be something right about the general idea of EI, but we have suggested that a crucial part of this something, the capacity to appropriately experience emotions, is not a focus of Mayer and Salovey's conception of EI. This is especially clear with respect to the EI construct as manifested in the MSCEIT (Mayer, Salovey, & Caruso, 2001), which we consider to be the most extensively investigated and best validated measure of EI that there is.[4] We believe that any test of EI that fails to incorporate an assessment of emotional experience or feeling would be a test on which intelligent, albeit nonsentient, computer programs could (in principle) demonstrate as high a level of EI as emotionally sensitive people. Yet it would be odd if an artificial intelligence (AI) system could exhibit high EI while the current state of AI is such that few if any would be willing yet to say that computers "have" emotions. How could a test of EI that was unable to discriminate between an emotionless AI system and an emotionally well adjusted person be an adequate test of EI? We could make the same argument replacing AI systems with psychopaths, whose trait profile according to Cleckley (1988) includes a lack of remorse, incapacity for love, failure to learn from punishment despite adequate reasoning abilities including reasoning about emotional matters and general poverty in major affective reactions. A test of EI ought to be able to distinguish individuals who are appropriately emotionally warm and empathetic from computers or from humans who superficially appear to react with normal emotions but are loveless, remorseless, emotionally shallow, and incapable of using negative affect to motivate behavioral adaptations. Emotional intelligence presupposes emotional feelings.

What the MSCEIT Measures: A Thought Experiment

We have just implied that, at least in principle, current AI technology is good enough to produce tolerable performance on the MSCEIT, as though an inability to distinguish

human from machine performance on the MSCEIT comprised an acceptable criterion for an "emotional Turing test" (Turing, 1950).[5] But does it? We take it as a given that computers as we know them today, regardless of how much AI they embody, do not have feelings. If this is right, and if the MSCEIT is a valid test of EI, then the MSCEIT should be capable of differentiating humans from (emotionless) machines. In this section, as a kind of thought experiment, we sample items from four sections of the MSCEIT with a view to examining this question. Even if there are as yet no systems that can produce humanlike responses to the different kinds of items on the MSCEIT, maybe we can articulate the kind of the design and information-processing principles that would be needed to do so. Accordingly, we examine the MSCEIT to see if its items are in principle amenable to algorithmic solutions. Because neither we nor anyone else knows of any algorithmic way in which to capture emotional experience or feelings, if a machine could generate reasonable responses, those responses could not be dependent on the ability to experience emotions.

The MSCEIT is comprised of eight subtests, or sections (see Figure 11.2), two for each of four "branches": (1) *perceiving* emotions (the faces task, section A; and the pictures task, section F), (2) *facilitating thought* through emotions (the facilitation task; section B; and the sensations task, section E), (3) *understanding* emotions (the changes task, section C; and the blends task, section G), and the fourth branch, (4) *managing* emotions (the management task, section D; and the relationships task, section H). In this brief review, we seek only to give the flavor of representative items, together with suggestions as to what kind of algorithmic procedures we think could in principle generate sensible responses to them. We focus in particular on the faces task, the pictures task, and (only) two of the language-based tasks (the facilitation task and the sensations task) because the kind of mechanisms needed to accomplish any one of the language-based tasks could be used for all of them.

In the faces task, respondents have to rate the intensity of facial expressions on each of five psychological state dimensions on a scale ranging from no emotion to extreme emotion. There are four items covering a total of seven different states. As already indicated, we assume that if a computer could perform this or any task, then feeling-based experience cannot be a prerequisite for successful task completion. In the case of facial expressions, accurate machine recognition of emotions is routine. For well over a decade, computer scientists have been developing a variety of techniques for automatically classifying facial expressions, typically into one of the six "basic" emotions proposed by Ekman, Levinson, and Friesen (1983) (although, see Ortony & Turner, 1990, for a challenge to the notion of "basic" emotions). The results of these efforts are dozens of algorithms that do a remarkably good job of classifying emotional expressions (typically with recognition accuracy between about 75% and 95%) using both static images and dynamic emotional expression displays (see Fasel & Luettin, 2003, for a review). Furthermore, some of the systems that do this even do well at estimating the intensity of the expressions. So, we can conclude with confidence that the faces task is well within the capacity of modern computer systems. Computers with no experiential knowledge of emotions or emotional feelings can learn to classify facial expressions of emotions quite easily.

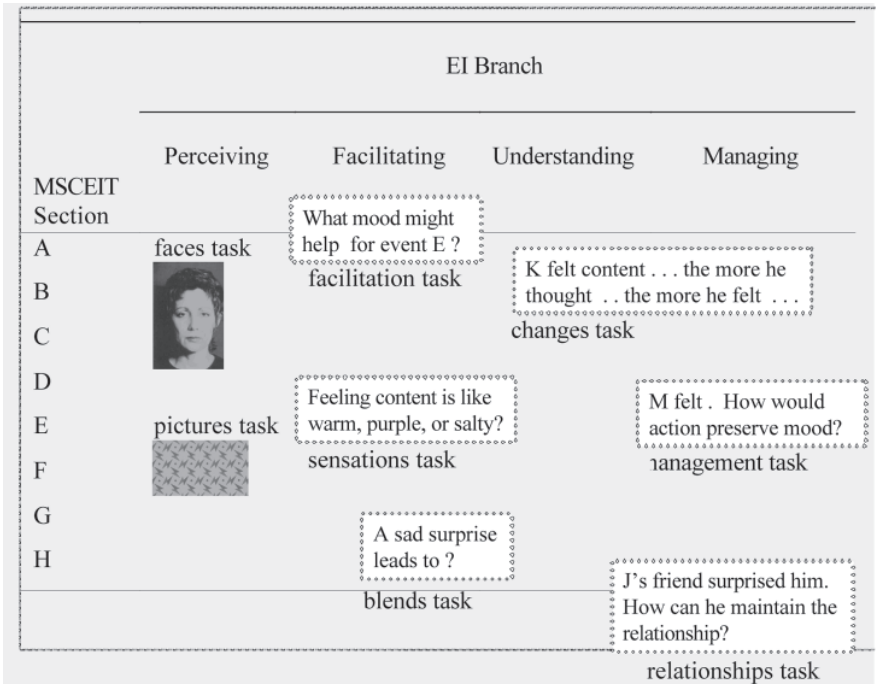

Figure 11.2. Relation between sections and the branches of the MSCEIT

The pictures task is the second of the two tasks designed to tap the *perceiving* branch. In this task, respondents have to estimate the intensity of five states "expressed" [*sic*] by pictures of naturalistic scenes or of abstract art ("How much of each feeling is expressed by the picture?"). Consider how this might be done for a scenic picture of blue-green water with rocks in and around it, assuming for the sake of argument that the input is a crude description of the scene.[6] Given such a description, reference to an associative thesaurus (e.g., the *Edinburgh Word Association Thesaurus;* Wilson, 1988) could easily generate some basic concepts such as *peaceful* and *beautiful* (it really doesn't matter much which). From these, one could extract the affective valence and strength—for example, positive concepts, but not excessively so—enabling a response of, say, a moderate level of happiness and no sadness, and no fear, anger, or disgust. Notice that accuracy here is not important, because there is no "correct" answer. But such a simple procedure would result in a reasonable response, not too different, presumably, from the responses that many people would give.

In the cases of abstract pictures, the same mechanism could be employed, although the starting point would require the basic shapes to be described using adjectives such as *hard*, *sharp*, *jagged*, and the colors as *saturated*, *bright*, *strong contrast*, *red*, *green*, *yellow,* and *blue*. The associations to and affective connotations of these words could be processed using the kind of algorithm described in Ortony and Radin (1989) operating on a database with semantic differential ratings (see Heise, 2001). Descriptors such as

hard, *sharp*, and *jagged* would presumably be associated with some moderate level of negative affect, whereas some of the descriptors relating to the colors would be associated with positive affect and some with negative affect. The color terms themselves could also elicit affect through conventional cross-modal mappings relating to "warm" and "cold" or "cool" colors ("soft" reds, blues, etc.). Some sort of associative process like this is psychologically plausible precisely because pictures of this kind are abstract (that is, they lack referential semantic content) so that associative mechanisms of one kind or another are the only basis upon which picture descriptions can be built in the first place.

Having a set of associatively derived affective markers is only half of what is needed to complete this kind of task. The other half of the process involves selecting a response from the response alternatives. In the case of the abstract picture, in the first column of Figure 11.2, the response scales are amount of happiness, sadness, fear, anger, and disgust. Selecting an appropriate response again requires an ability to *reason* about emotion concepts. One might, for example, reason that *happiness* and *sadness* are very general forms of affect respectively, with *fear*, *anger*, and *disgust* being more specific kinds of negative affect—they are particular ways of being unhappy (Ortony & Turner, 1990) and there is no semantically based reason for selecting them. This might lead to the selection of a small amount of *happiness* (e.g., a rating of 2) and a larger amount of *sadness* (e.g., a rating of 4), because there were more descriptors activating negative as opposed to positive affect. The fact that there is no semantically based reason for selecting specific emotions does not preclude the possibility of their being selected on the basis of associative connections. Such associations might result in slight activation of *fear* (sharp jagged edges can be dangerous), and a slight activation of *anger* (one meaning of *sharp* is associatively related to *anger*, as is *harsh*). In this case, small amounts of the expression of *fear* and *anger* might also be endorsed.

"If you had to create new, exciting decorations for a birthday party, what mood or moods might be helpful?" This is one of the five items that comprise Section B. Each item has three mood states to rate for their usefulness on a 5-point scale ranging from not useful to useful. In this case, the mood states are *annoyance*, *boredom*, and *joy*. Again, once one has a reasonable representation of the underlying structure of moods and emotions, it is easy to envisage a procedure that would generate a reasonable response. Everything in the context description points to positive affect (birthday party, exciting, decorations). The simple heuristic of matching the mood to the (demands of) the context will result, in this example, in the endorsement of a positive mood as helpful, and the rejection of negative ones. Rejecting a mood state means assigning it a value of "not useful." The only remaining decision, in positive cases, is what value to assign. The simplest heuristic for value assignment would be to choose moderate values (3 or 4) except if there is only one candidate, in which case one might assign the maximum value on the usefulness scale. Again, we suspect these details are not crucial for generating a reasonable pattern of responses.

Finally, one might think that at least the sensations task (Section F) tries to get at the experiential component, but it really doesn't succeed because it too can be solved by matching associatively related affective values—"content" is mildly positive, as is

"warm" (but not "purple" or "salty"). One knows this by knowing the language, so not even items like these necessarily tap into emotional experience.

The crucial point, and one that applies to the items on all the other subtests in the MSCEIT (for which reason we will not review them further), is that responses are made by *reasoning* about emotions in a way that can be accomplished provided only that one has a *cognitive* (and linguistic) representation of emotions. No direct experience of emotions is necessary, and that, we think, is the problem not just for the MSCEIT, but probably with any pencil-and-paper test that one could imagine.

None of the above is to deny that an important feature of EI is the ability to understand and reason about emotions and emotional reactions. This ability, which by analogy with measures of general intelligence, G, and its components (Horn & Cattell, 1966), we can call crystallized EI, or EIc, is well measured by the MSCEIT. But our point is that if a measure of EI also has to assess people's abilities in the domain of emotional *experience*, then there will need to be a component of the measure that assesses the fluid (affective), experiential component of emotion, EIf.

In this section, we have tried to show that responses to the MSCEIT could be generated by algorithmic processes that do not require any emotional experience. But there are also empirical reasons derived from a structural analysis of the MSCEIT that lead to the same conclusion. Factor analyses tend to show a hierarchical structure of four correlated factors (the "branches") nested in two higher order factors, which themselves are correlated (Mayer et al., 2003).[7] When we apply an analysis of hierarchical structures to the disattenuated correlations reported in the manual (Mayer et al., 2001) for the MSCEIT (i.e., a Schmid-Leiman transformation of an oblique factor solution to produce a general factor and orthogonal residual factors; Schmid & Leiman, 1957), we find support for a general factor of EI, but, as can be seen from Table 11.1, it is a factor that is primarily associated with the last five sections of the MSCEIT. That is, it appears that the sections with the highest loadings on the general factor common to all of the sections, EIg, are those that are most cognitively oriented.

Administering the MSCEIT to psychopaths and appropriate controls would provide a further empirical test of whether the MSCEIT is primarily a measure of EIc. Given that psychopaths are widely recognized as being emotionally shallow and deficient in inhibiting behavior that has previously led to punishment and negative affect, it is clear that they are deficient in EIf. On the other hand, regarding the psychopath's ability to reason about emotion, Cleckley observed, "He also shows no evidence of a defect. So long as the test is verbal or otherwise abstract, so long as he is not a direct participant, he shows that he knows his way about" (1988, p. 346). Although as yet there are no data directly bearing on the performance of psychopaths on the MSCEIT, there is evidence suggesting that they would not be deficient on the faces task. That is, whereas some studies have found psychopaths to be deficient at recognizing a particular emotional expression (e.g., Blair, Colledge, Murray, & Mitchell, 2001; Blair et al., 2004; Kosson, Suchy, Mayer, & Libby, 2002), there has been inconsistency across studies in terms of whether psychopaths are deficient in recognizing disgust, sadness, or fear. Moreover, these studies have all failed to find significant group differences in recognizing the vast

TABLE 11.1. Schmid-Leiman orthogonalization of factors from the MSCEIT.

	EI_g	*Factor1*	*Factor2*	*Factor3*	*Factor4*	*h2*	*u2*
Faces	**0.44**	0.02	**0.54**	0.00	0.04	0.43	0.57
Pictures	**0.51**	0.03	**0.30**	0.02	0.16	0.22	0.78
Facilitation	**0.55**	0.01	**0.42**	0.10	0.09	0.30	0.70
Sensations	**0.79**	0.04	0.08	0.03	**0.44**	0.63	0.37
Changes	**0.71**	**0.63**	0.06	0.01	0.02	0.93	0.07
Blends	**0.72**	**0.57**	0.08	0.03	0.04	0.79	0.21
Manage	**0.76**	0.03	0.08	**0.55**	0.05	0.88	0.12
Relations	**0.76**	0.00	0.08	**0.51**	0.08	0.77	0.23

Note: Factors 1–4 are orthogonal to each other and to the general factor. Correlations from the MSCEIT manual were corrected for attenuation and then factored.

majority of expressions included, and Kosson et al. even reported that under some conditions, psychopaths were superior to normal controls at recognizing anger.

An Alternative Construct of EI: Emotional Fit

If EI is indeed an ability, then it should possess one of the defining features of abilities, namely that the measure of the ability should have the property that that higher observed scores indicate more of that ability. In the context of EI, one thing this cannot mean is that the more emotion a person experiences the more emotionally intelligent that person is. Somebody who committed suicide out of sympathy for a friend who lost $20 would have evidenced plenty of emotion, but we would hardly want to call such a response an emotionally intelligent one. Similarly, one would not want to say that the more a highly emotionally aware and sensitive army general "feels" for the pain and suffering of his troops, the more effective he is. What about his sensitivities apropos innocent civilians, or even his opponents? To the extent that such sensitivities were to lead to inaction or inappropriate military action, one would not argue that the general was emotionally intelligent or functionally effective, but rather that he was hypersensitive and ineffective. So, it would appear that one can have "too much" emotional sensitivity, yet a measure of emotional sensitivity surely ought somehow to figure in a measure of EI.[8]

This problem is exacerbated by the fact that very many of the ingredients of EI are likely to be noncognitive personality traits. A characteristic of such traits (e.g., Big Five traits, conscientiousness, agreeableness, neuroticism, openness, and extraversion) is that like the general's emotional sensitivity, their value or utility is generally best described by an inverted U-shaped function so that for optimal functioning (relative to any given context), it is not effective to be at one end of the scale or the other. Consider, for example, neuroticism. At the low (emotionally stable) end, such individuals tend to be

unresponsive to threat and lacking in emotions such as remorse, whereas at the high end, they are overreactive neurotics. Neither is optimal. Similarly, too much boldness can lead to excessive self-confidence, but too little can lead to indecisiveness (see Hogan & Kaiser, 2005, for further examples of how extreme levels of personality traits can lead to suboptimal performance). Thus, whereas for *cognitive* abilities, more is clearly better, so that (cognitive) intelligence is always monotonically related to optimal functioning, for many (perhaps all) of the constituents of EI, this is not the case. The relation between the quantity of these constituents and their utility is a curvilinear (inverted U) rather than a monotonic function.

So if we want to treat EI as an ability, how can we satisfy the more-is-better requirement? To the degree that the construct of EI is conceived as a cognitive ability, it is in principle capable of accommodating such a requirement. But what of our demand that EI incorporates an experiential component with its predominantly curvilinear components? As we have already suggested, we can think about the experiential component by analogy to the distinction between fluid and crystallized cognitive intelligence (Gf and Gc), making the same fluid-crystallized distinction for EI. The fluid, experiential component of EI, EIf, would be the ability to "appropriately" *respond* to emotion-inducing situations, whereas crystallized EI, EIc, would be the measure of how much a person *knows* about emotions and about the appropriateness of emotional responses (which the MSCEIT already measures).

We could then view EIf as having to do with how well a person's emotional experiences are appropriate to, or "fit," the conditions. In other words, we could think in terms of trying to assess the extent to which affective reactions and sensitivities contribute to or interfere with people's capacity to optimize the physical and social functioning in the environmental conditions in which they find themselves. Viewed in this way, part of the EI construct becomes a "goodness of emotional fit" notion having to do with the qualitative and quantitative appropriateness of emotional responses to situations. In this way, EIf would be monotonically related to fit, and the measure of it would be a measure of the *ability to maintain (qualitatively and quantitatively) optimal affect for effective functioning*. This would resolve the more-is-better problem, a problem that is even more serious when viewed in light of the much discussed question of the appropriateness of consensus scoring of the MSCEIT, because consensus scoring has the curious property that the more average a set of responses, the better the ability.[9]

However, introducing a fluid component into the construct of EI to accommodate the need to take account of emotional experience still leaves unaddressed the question of what the principle constituents of the fluid component might be. As a first approximation, we suggest that it is comprised of four partially independent abilities deriving from the model of emotion presented at the beginning of this chapter, and all focusing on aspects of how a person *responds* to emotion-inducing situations rather than on what a person *knows or believes* about (the appropriateness) of such responses. The constituent abilities we have in mind are (1) responding to diverse situations with (only) *appropriate emotions*, (2) responding to situations with emotions of *appropriate intensity* (i.e., having an optimal level of emotionality), (3) responding to situations with emotions having (only)

appropriate motivational components (wants), and (4) responding to situations with emotions having (only) *appropriate behavioral expressions* ([in]actions).

The idea behind the first of these, *responding to diverse situations with (only) appropriate emotions*, is to capture the emotion *identity* aspect of EI. Emotionally intelligent people have the "right" emotions at the right time. Except under extraordinary conditions, a woman who has just been informed that she has won a prestigious prize is more likely at that moment to experience gratitude than jealousy toward the person who nominated her. The reference to "diverse situations" is intended to provide a metric for emotion identity. In the case of gratitude, for example, there are many and varied kinds of situations in which gratitude would be an appropriate emotion. The idea would be that the measure of the identity constituent increases as diversity of gratitude responses in gratitude-appropriate situations increases.

Associated with the emotion identity constituent is a corresponding quantitative aspect, *responding to situations with emotions of appropriate intensity*. Other things being equal, the *intensity* of an emotion has to fit the situation and the perceived significance of the initiating event. One would not attribute much EI to a person who experienced the same level of distress from a minor inconvenience such as getting slightly damp from a light spring shower as from a major personal catastrophes such as the tragic unexpected death of a loved one.

The third constituent, *responding to situations with emotions having (only) appropriate motivational components,* also has to be further analyzed into its qualitative and quantitative facets. The idea is that EI precludes incongruous qualitative aspects of motivation such as wanting to viciously attack a cherished friend because she just did exactly what you had asked her to do. It also precludes inappropriate quantitative aspects of motivation such as wanting to seek bloody revenge upon someone for some trivial infraction such as forgetting to pick up milk as promised from the grocery store.

Finally, the fourth constituent ability, *responding to situations with emotions having (only) appropriate behavioral expressions*, has to do with self-regulation of the actual behaviors. Even when the motivations "fit" the situation, emotionally intelligent individuals are able to modulate their behaviors to make them better fit the situation. More emotionally intelligent individuals should be better able than less emotionally intelligent individuals to resist acting on a desire to drop everything and run in the face of a threat when the cost of running could be expected to far outweigh the benefits of doing so.

Viewing EIf as being comprised of these four (and probably several other) constituent abilities in terms of the "appropriateness" of (facets of) emotions across heterogeneous situations satisfies the requirement that higher levels of EI be associated with higher levels of functionally effective emotional responses. Viewed in this way, more is better. One reason for suspecting that this might be a profitable way of thinking about EI is that when constituent abilities of the kind we have laid out are absent in individuals, those individuals are likely to be characterizable as suffering from emotional disorders of one kind or another. For example, the psychopath who fails to experience empathy under conditions that would warrant empathy is failing to respond to a situation with

(only) appropriate emotions, phobics respond to situations with inappropriately intense fear emotions, and so on.

Finally, we need to ask what kind of assessment procedure might enable one to measure a revised construct of EI along the lines we have suggested. One possibility might be to devise virtual reality environments with a view to monitoring how individuals respond to various simulated, albeit realistic, emotion-inducing situations and thus assessing individual differences in fluid EI. But even such a new age solution would have its limitations—limitations that are identical to those that sometimes plague us in the real world. Ultimately, one can never have access to the internal lives of others. The best one could hope for would be converging evidence from an array of externally observable signs—correlates of emotional experience ranging from self-reports, to physiological data (for gross aspects such as intensity), to actual behaviors and behavioral expressions.

In addition, a "portfolio" approach to assessment might be useful. That is, individuals could be interviewed to ascertain whether they have consistently responded to diverse situations with appropriate emotions of appropriate intensities and with appropriate motivational inclinations and behavioral expressions. One might even conduct interviews with collateral informants, especially if there were reason to doubt the veracity of a respondent's report. Of course, obtaining converging evidence across a battery of measures using multiple methods or EI interviews would undoubtedly be far more resource intensive to administer than the MSCEIT.

On the other hand, such approaches are more likely to help us distinguish genuinely emotionally responsive individuals from highly skilled psychopaths in a way in which we think a paper and pencil test could never do. Indeed, numerous studies have found abnormalities in the physiological responses of psychopaths to affective stimuli (e.g., Forth, 1992, Study 2; Hare & Quinn, 1971; Levenston, Patrick, Bradley, & Lang, 2000; Patrick, Bradley, & Lang, 1993). Similarly, Hare and his colleagues (Hare, 1980, 1985; Harpur, Hakstian, & Hare, 1988; Harpur, Hare, & Hakstian, 1989) have shown that interviews (and reviews of institutional records) can reliably and validly distinguish psychopaths from controls.

Conclusion

The hypothesis that there are reliable individual differences in the ability to perceive, understand, and manage emotions in the service of effective functioning is very appealing to us. Others in this book and elsewhere (e.g., Matthews, Zeidner, & Roberts, 2002) have addressed the relationship of these abilities to the more traditional cognitive abilities. Although we do not want to confuse the measurement of a construct (e.g., the MSCEIT) with the construct itself (EI), we have suggested that the MSCEIT, the best validated test of EI, probably cannot distinguish the responses of a sensitive human from those of a well-programmed computer or of a psychopath. That the subtests with the highest loadings on the general factor of the MSCEIT (EIg) are the ones that are

most easy to imagine being answered by computers adds credence to our view that the MSCEIT is really only half of the story, measuring as it does primarily EIc. Ultimately, one would like to find some feasible way of assessing EIf that in combination with the MSCEIT could provide a measure of a richer construct of EI—one that incorporated an experiential component having to do with the ability to respond appropriately emotionally to heterogeneous situations. Although we have offered some preliminary suggestions as to what the principal constituents of a fluid component of EI might be, we would be the first to acknowledge that it is much easier to criticize an existing measure than it is to construct and validate a better one, and certainly we have not even begun to address the question of how one might operationalize our notion of "appropriateness," a notion upon which we lean rather heavily.

Notes

1. An important cautionary note is needed: The notion of effective functioning, although having some intuitive appeal, especially when pertaining to threats to basic needs, is not without its problems at the more complex level of social behavior. We recognize that the construct is underconstrained and possibly problematic. Ironically, our account of effective functioning could be said to suffer from some of the same problems that we attribute to the construct of EI. Nevertheless, we find it helpful as an organizing framework for thinking about the kinds of issues we are addressing here.

2. Presumably the move from recognizing emotions and emotional relationships to perceiving them is based on the entirely reasonable assumption that recognition depends on perception—that in order to recognize an emotion, one must first, in some sense, perceive it.

3. We freely admit that some of our own work (e.g., the so-called OCC model of Ortony, Clore, & Collins, 1988) has just this feature: It focuses (albeit intentionally) on only the cognitive aspect, paying little or no attention to the feeling component (Arbib, 1992).

4. There are, of course, other tests of EI, most notably the "EQ" test described in Bar-On and Parker (2000), but we prefer to examine the measure of EI designed by those who developed the construct.

5. Of course, the logic here is rather different. For the original Turing test, the idea was that an inability to distinguish the responses of a human from those of a machine would warrant the inference that machines can "think." For our "emotional Turing test," the starting point is the "fact" that machines can't emote, so that an inability to distinguish the responses of a human from those of a machine mean that the test (in this case the MSCEIT) is not actually assessing the ability to emote.

6. We need not concern ourselves with the question of whether current work on scene understanding can generate such a description because that is an aspect of the problem that has absolutely nothing to do with emotion. This simplifying strategy is analogous to that made for the Turing test with respect to speech understanding and generation. In both cases, the assumption is that the focus has to be on the *content* of what is being expressed, not on giveaway surface features, such as voice quality, that have no necessary connection to that content.

7. The Mayer and Salovey concept of a hierarchy appears to be an inclusion hierarchy: Managing emotions *includes* understanding emotions, which *includes* using emotions, which *includes* perceiving emotions (Mayer et al., 2003). This seems to imply an ordering of necessity: Without

the ability to *perceive* emotions, one cannot *use* emotions, and without the ability to *use* emotions, one cannot *understand* them, and without the ability to *understand* emotions, one cannot *manage* them. Such a "Russian dolls" nested hierarchy implies a simplex correlational structure, that is, when the subtests are appropriately ordered, the greatest correlations are nearest the diagonal and systematically fall off as one moves away from the diagonal. This is very different from the traditional treelike hierarchy seen in analyses of mental abilities (e.g., Carroll, 1993), in which subtests may be grouped into nonoverlapping clusters, which themselves may be grouped into higher order clusters.

8. Issues that warrant further discussion, but not here, include the question of how much of the variance in EI is accounted for by curvilinear constituents such as emotional sensitivity, and the extent to which actions (or inactions) are determined solely by EI (as opposed to EI together with practical reasoning capacities).

9. In this connection, we note that consensus scoring is not likely to be a useful way to measure abilities. A majority of the population in the United States believes in scientifically implausible explanations for natural phenomena. Consensus scoring would reject the last 150 years of biology, physics, and geology.

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