

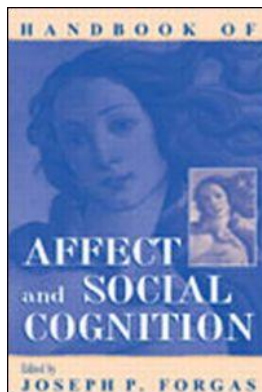
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Publisher: *Routledge*

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Handbook of Affect and Social Cognition

Joseph P. Forgas

Emotion, Intelligence, and Emotional Intelligence

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9781410606181.ch19>

John D. Mayer

Published online on: 01 Nov 2000

How to cite :- John D. Mayer. 01 Nov 2000, *Emotion, Intelligence, and Emotional Intelligence from: Handbook of Affect and Social Cognition* Routledge

Accessed on: 08 Dec 2023

<https://www.routledgehandbooks.com/doi/10.4324/9781410606181.ch19>

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19

Emotion, Intelligence, and Emotional Intelligence

John D. Mayer
University of New Hampshire

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Address for correspondence: John D. Mayer, Department of Psychology, 10 Library Way,
University of New Hampshire, Durham NH 03824, USA. Email: jack.mayer@unh.edu

The study of emotional intelligence emerged, in part, from the research area of cognition and affect—an area that was concerned with how emotion changed thought, and vice versa.

The research area of cognition and affect gained in visibility during the years 1978 to 1982 as a consequence of several key publications. First, Isen, Shalcker, Clark, and Karp (1978), writing in the *Journal of Personality and Social Psychology*, considered the possibility that there existed a “cognitive loop” connecting mood to judgement. Their “loops” described the possibility that, for example, as a person grew happy, he or she might cognitively judge past social behaviors as more helpful and kinder than otherwise, thereby further improving his or her mood. A downward loop was possible as well, with bad moods leading to negative thoughts and to worse feelings.

Each year, the American Psychological Association awards a Distinguished Scientific Contribution Award to several scientists, each of whom delivers an address that is reprinted in the *American Psychologist*. In one 1980 address, Robert Zajonc (1980) argued that feelings were more important than cognition in determining attitudes. He quoted from ee cummings that

since feeling is first
 who pays any attention
 to the syntax of things
 will never wholly kiss you
 —ee cummings, cited in Zajonc, 1980, p. 151

Gordon Bower, an award winner the following year, examined mood’s profound influences on memory. He described a spreading activation model of memory in which happy moods activated happy thoughts and sad moods activated sad thoughts, which helped explain many empirical phenomena in the area (Bower, 1981). The next year saw publication of Clark and Fiske’s (1982) edited volume, *Affect and Cognition*, which brought together much work in the area.

The study of emotion and thought by cognitive psychologists (and allied social and personality psychologists) marked a departure from much research on emotion-cognition interactions. Sigmund Freud’s concept of defense mechanisms emphasized interactions between emotion and thought, but with a distinct emphasis on the pathological (e.g., S.Freud, 1940/1949; A.Freud, 1937/1966). Thereafter, Aaron T.Beck (1967) suggested that depression was caused by negative cognitions

that exaggerated failure and incompetence (e.g., Beck, Rush, Shaw, & Emery, 1979).

When the cognition and affect literature emerged, it inherited the view that emotions biased and disrupted thought. Some early research in the area freely induced “depressed” and “elated” mood states and examined the thought processes of mood-disordered patients. The emphasis of mostly cognitively trained psychologists, however, was on extending such findings to normal people undergoing emotional episodes. Thus, mood inductions in the area emphasized “happy” and “sad” moods rather than pathological states (e.g., Bower, 1981; Fiske & Taylor, 1991; Forgas, 1995; Salovey & Birnbaum, 1989). Ultimately, mood influences were examined in everyday people going through everyday moods and mood changes (e.g., Espe & Schulz, 1983; Forgas & Moylan, 1987; Mayer & Bremer, 1985; Mayer, Gaschke, Braverman, & Evans, 1992; Mayer & Hanson, 1995; Mayer, McCormick, & Strong, 1995). As research on emotions and thought moved from an emphasis on psychopathology to everyday moods and thoughts, the idea that emotions might be adaptive for thought coexisted with the idea that they caused bias. Ketelaar and Clore (1997, p. 357) observed: “Although most psychologists view demonstrations of emotional influence as evidence of bias and distortion, some others are beginning to focus on functional rather than dysfunctional relationships between emotion and cognition...”

One outcome of this development was the concept of emotional intelligence—the idea that emotions and intelligence can combine to perform more sophisticated information processing than either is capable of alone (Mayer, DiPaolo, & Salovey, 1990; Salovey & Mayer, 1990). The purpose of this chapter is to introduce workers in cognition and affect to the area of emotional intelligence. To do this, the nature of emotion and cognition are briefly described in the second section of this chapter. Emotional intelligence is then defined and described in the third section. Research in the area, and the implications of emotional intelligence for cognition and affect are examined in the fifth, “Conclusion” section.

There are really “two” emotional intelligences in the literature nowadays. One is the popular emotional intelligence, which is defined in various different ways, is said to be readily acquired, to outpredict intelligence, and to be the best predictor of success in life. The other emotional intelligence is the scientific concept to be examined here. Elsewhere, my colleagues and I have made a concerted effort to take the popularized versions of our emotional intelligence theory seriously, to see if they make sense. The interested reader is invited to refer to our own and others’ various comparisons

of the approaches (e.g., Epstein, 1998; Mayer, Salovey, & Caruso, 1999; Mayer & Cobb, 2000). Here, I examine the more research-based concept of emotional intelligence, for that is the one my colleagues and I conclude has the most potential to contribute to scientific psychology.

PUTTING EMOTION AND COGNITION IN THEIR PLACE

The Trilogy of Mind

Emotion and *cognition* are often said to constitute two parts of a trilogy of mind (Hilgard, 1980; Mayer, Chabot, & Carlsmith, 1997). The full trilogy also includes *conation*, which is usually interpreted as denoting motivation.¹ The conation-affect-cognition trilogy (Table 19.1) dates from the 18th century and has gradually been updated with the times.² Hilgard (1980) argued that the full trilogy provides a relatively complete view of the mind, and that when our psychological science treats all three, it is balanced; our models become unbalanced through neglect of one or another area.

The three parts of the trilogy are arranged from the smaller, more biologically driven system of motivation, to the larger, broader one of cognition. Broadly speaking, the motivational system is the portion of the trilogy responsible for inward, bodily monitoring that signals important biologic needs and urges to the rest of the mind. For example, motives translate bodily needs into psychological urges: the body's need for food into hunger; the need for water into thirst, and the need for self-defense into urges for safety or attack.

Emotions, too, are internal in the sense that feelings can be private, and that emotions arise in response to internal models of relationships with other people and situations. It is worth stressing this internal quality of emotions. One responds directly to relationships one believes one has, and only indirectly to the actual relationships. Most of the time we do not pay

¹ A more historical interpretation is that conation refers to "will" or "conscious will." Sometimes the trilogy is expanded to a quaternity by adding "consciousness."

² Although the trilogy dates at least from the 18th century, the trilogy of mind has gradually changed to keep up with the theoretical times, as it were. Over the years, the trilogy has been viewed increasingly as (a) psychologically internal and closely associated with a brain area or areas; (b) defined so as to include an arguably unitary group of functions; (c) close to automatic, biologic, and unlearned processes; and, finally, the entire trilogy is (d) recognized as spanning important parts of the mind rather than being a comprehensive description of the entire mind.

TABLE 19.1 An Overview of Conation, Affect, and Cognition

Characteristic	<i>Conations</i>	<i>Affects</i>	<i>Cognitions</i>
RELATIVELY SIMPLER, PURE EXAMPLES:	Hunger pangs, urge for physical contact	Basic happiness, anger, sadness, fear	Sensorimotor operations, learning, associations
RESPONDS TO:	Internal body states	Changed relationships	Either internal or external states
OVER TIME:	Precedes action, rises and falls rhythmically or cyclically	Respond to events and follow specific timelines	Occurs any time
INFORMS US ABOUT:	What is lacking and what must be done	A class of events that must be addressed	Specific or general, depending on problem REQUIREMENTS, ETC.
ASSOCIATED MAJOR BRAIN AREAS ARE:	The brain stem and limbic system	The limbic system	The association and cerebral cortex

Adapted from Mayer, J. D., Chabot, H. F., & Carlsmith, K. M. (1997). Conation, affect, and cognition in personality. In G. Matthews (Ed.), *Cognitive science perspectives on personality and emotion* (pp. 31-63). New York: Elsevier.

too much attention to this distinction because the internal models match the external world fairly closely. Sometimes, however, we learn from friends and relatives—who are often anxious to correct us—that what we believed was going on in our relationship with them in fact was not. In such cases, we discover that our own internal model of the relationship was wrong, and what actually had gone on was something we had not dreamt of!

Each emotion signals a different relation. Some emotions signal relations jointly with motivations, so as to amplify them. For example, anger signals injustice and often accompanies the motive to aggress and amplifies it. An altruistic motive is amplified by happiness, which signals harmoniousness (Salovey, Mayer, & Rosenhan, 1991). Fear signals the presence of threat and cooccurs with the need for avoiding harm. Sadness signals loss and a need for reflection and isolation. Although some emotions cooccur with motives, others are more independent of the motivational system. For example, acceptance, regret, and contempt are less readily equated with specific motives.

The third, cognitive, system is the most independent of the person, and the most integrated with and beholden to outside influences. On the one hand, cognition serves motivation and emotion, solving problems so that motivational needs may be met and emotions maintained at an acceptable level of positivity over time. On the other hand, cognition is outward

looking, actively learning about the external world, problem solving, and imagining new environments that can be created through actions.

Other Parts of Personality

The three parts serve as features or aspects of the mind, but they do not define the full activities of human personality. Rather, they play supportive or embedded roles in learning and acting (Mayer, 1995, 1998). Each individual must create models or maps of him- or herself, of the world, and of him-or herself in the world. These learned models interact with the trilogy of mind. Consider models of the world of dinosaurs. As a child learns about the *Giganotosaurus*—the largest dinosaur discovered thus far—that learning includes attaching motivations to it, such as imagining fleeing from it, or wanting to be strong and dangerous. It also involves attaching feelings to it, such as fear and awe, as well as simple information such as that *Giganotosaurus* lived 90 million years ago and that the name means “giant reptile of the south.”

Personality traits emerge from the motives, feelings, and thoughts that permeate the learned models of the self and world. As learning takes place, motives, feelings, and thoughts are embedded in concepts. For example, a need for excitement may become attached to mental models of adventure novels as well as to judgments of that material (e.g., judging it according to how fast-paced it is). The same need for excitement might generate interest in the *Star Wars* music of John Williams, in preference to calmer pieces. As these motives and emotions become distributed over many learned concepts, they may reach a critical mass and work together thematically. Traits can be thought of as such thematically related features of personality (Mayer, 1995, 1998).

Emotional Traits

There exist many traits related to emotionality: aggressiveness, empathy, emotionality, emotional intensity, and so forth. One useful conceptual breakdown of the two most central emotional traits refers to: (a) an average mood level, which denotes the degree to which a person is typically feeling pleasant (e.g., happy) or unpleasant (e.g., sad, angry, afraid); and (b) a degree of mood variability, which denotes whether a person’s mood is fairly consistent, unchanging, and nonreactive, versus whether a person’s mood is variable, changeable, and highly reactive. Individual differences in the first emotional trait, mood level, begin at the low point of the deeply depressed;

move up to the person we might describe as a melancholic pessimist; to the happy-go-lucky optimist; and then, to the pathological extremes of a manic personality. Individual differences in mood variability are equally big, ranging from the individual who manifests virtually no mood at all (sometimes referred to as *alexithymic*; e.g., Taylor, 1984); to the merely stable and calm; to the person with reactive, intense mood swings and ready emotional responsiveness (e.g., Larsen & Diener, 1987) to the clinical extremes of the cyclothymic personality disorder; and finally to the Bipolar I and II affective disorders (formerly known as *manic depression*). This continuum has been mapped by Goodwin and Jamison (1990; cf. Carson, Butcher, & Mineka, 1996, p. 213).

Mood level and mood variability are somewhat related. People with stable nonreactive moods also tend to express more pleasant mood levels, and in contrast, people with mood variability tend to experience more negative, unpleasant moods. A dimension describing negative, variable emotionality, on the one hand, and pleasant, stable mood, on the other is Hans Eysenck's dimension of *emotionality-stability*, (which is also called *neuroticism-stability*, a regrettable name given its pathological connotations). *Emotionality/neuroticism-stability* is one of five central traits known as the Big Five that lay people use to describe one another. In the NEO-PI, which measures the Big Five, emotionality-stability is subdivided into smaller factors, three of which refer to mood level (anxiety, angry hostility, and depression), and three of which refer to instability (self-consciousness, impulsiveness, and vulnerability; Costa & McCrae, 1992).

Cognitive Traits

Just as there are differences in emotional dimensions of personality, so too, are there cognitive differences. A major individual difference variable in cognition is general intelligence, of course, although there are plenty of other cognitive traits as well; for example, field dependence-independence, reflectivity-impulsivity, creativity, and the like. General intelligence, in turn, can be divided into fluid and crystallized intelligence, and a number of smaller group intelligences (Carroll, 1993). Three national conferences on intelligence in the 20th century have identified the *sine qua non* of intelligence as the capacity to carry out abstract reasoning, and these same conferences also identify adaptation as of some importance (Neisser et al., 1996). A review of 20th century intelligence theories suggests that most specify some form of information that is input to a central processing area, the creation

of expert information to reference (e.g., crystallized intelligence), and the output of accurate information (Mayer & Mitchell, 1998).

Emotion and Cognition: What Is Intelligence and What Is Not?

Many effects within the cognition and affect literature are independent of intelligence per se. For example, *mood congruence* refers to the idea that happy people have happy thoughts, whereas sad people have depressed thoughts. More specifically, the effect states that: “An affective match between a person’s moods and ideas increases the judged merit, broadly defined, of those ideas. For example, mood-congruent concepts will be judged richer in associations, mood-congruent attributes will be judged as more applicable, mood-congruent examples of categories will be judged as more typical, and mood-congruent causes and outcomes will be judged more probable” (Mayer et al., 1992, p. 129).

Mood-congruence effects, including happiness-induced optimism and sadness-induced pessimism are biases—unrelated to intelligence. If mood congruence leads a happy person to think that good weather is on the way and Paris is a good example of a city, and if mood congruence leads a sad person to think that bad weather is on the way and that overcrowded Calcutta is a good example of a city, neither person is more correct on average. Rather, each is using a different, legitimate perspective. The proverbial glass is no more half full than it is half empty.

Some cognition and affect researchers have looked for ways in which emotion might facilitate thought. One idea they investigated was whether certain emotional states in particular might render intelligence more effective than other states. So, researchers suggested variously that moderate happiness might enhance recall relative to other feelings (Ellis & Ashbrook, 1988); enhance creativity (Isen, Daubman, & Nowicki, 1987); or enhance the global processing, such as inductive reasoning (Palfai & Salovey, 1994).

Although happiness appeared good for some types of thoughts, sadness had its own champions as well. Alloy and Abramson (1979) suggested the possible existence of “depressive realism”—that depressives more accurately comprehend the world than happy people. The researchers had studied college students who estimated their degree of control over a green light that went on only sometimes after they pressed a button. Over experimental conditions, pushing the button was varied in terms of its control over the light—from no control to moderate levels of control (Alloy & Abramson,

1988, p. 22; Benassi & Mahler, 1985; Martin, Abramson, & Alloy, 1984). Depressed people's sensitivities to actual control were more realistic much of the time. Furthermore, depression may assist more detailed processing. Palfai and Salovey (1994) argued that although inductive reasoning was better in good moods, deductive reasoning was better in sad moods.

The area of cognition and affect perhaps came closest to the idea of emotional intelligence at its interface with cognitive science and artificial intelligence. There, computer scientists had begun to develop software that could unravel the secrets of understanding emotional episodes (Dyer, 1983). As they understood the informative nature of emotional stories, they wondered whether giving computers emotions would enhance the computers' function in some ways. Some argued that computers and robots should have emotions, because those feelings would help them think through certain problems (Mayer, 1986; Sloman & Croucher, 1981); this theme is currently receiving renewed interest in computing circles (e.g., Picard, 1997).

THE THEORY OF EMOTIONAL INTELLIGENCE

Emotion as Information

To some, emotion and intelligence seem as different as oil and water. In fact, the very term *emotional intelligence* appears to be an oxymoron—expressing a contradiction not much different than those found in such phrases as a “small crowd,” “peace force,” or a “definite maybe.” Thought of this way, emotional intelligence may be “clearly misunderstood!” The assumption that renders emotional intelligence sensible is that emotions themselves convey information that can and ought to be processed—they signal relations.

Since at least the writings of Aristotle (384–322 BCE), philosophers have read meanings into emotions. Spinoza's *Ethics* (Part III) is entitled, “On the Origin and Nature of Emotions” and provides a glossary of emotion meanings. Each emotion defines a person's relationship to his or her own self and to other people. Approval is “love towards one who has done good to another” (cited in Calhoun & Solomon, 1984, p. 81). Moreover, emotional meanings are regular and often universal. In the 19th century, Darwin argued that the language of emotion was anchored by specific facial and postural expressions and signs, across species and among humans around the world. Thus, contented expressions in the dog should be recognizable to other dogs as well as to people, just as contented expressions in people

could be interpreted by dogs. This work was extended and verified over a century of research (e.g., Ekman, 1973).

The mantle of deciphering the universal meanings of emotion was taken up by cognition and affect researchers in the mid-1980s. Roseman (1984) outlined an elegant system that defined joy as the positive feeling that follows certainty that reward is present, and contrasted it with relief, defined as the positive feeling that punishment is absent. Ortony, Clore, and Collins (1988) took a similar approach, defining joy as a “well-being” emotion that involves the self’s reaction to desirable events. The information these emotions convey is what is processed in emotional intelligence.

In 1990, my colleague, Peter Salovey, and I published two articles on emotional intelligence. One provided the first formal definition of the concept (Salovey & Mayer, 1990), and the other provided a demonstration study that aspects of the concept could be measured as an ability (Mayer, DiPaolo, & Salovey, 1990). A revision of that earlier model divides emotional intelligence into four branches of abilities: (a) the perception and expression of emotion, (b) the integration of emotion in thought, (c) understanding emotions, and (d) managing emotions (Mayer & Salovey, 1997). Each of these four classes of abilities are integral to the overall theory, and are described in turn in the following subsections.

Emotional Perception

The processing of emotional information begins with its accurate perception. An emotional perception system is likely “built-in” through evolution, to promote communication between infant and parent. The mother mirrors the infant’s smiles in her smiles, the infant’s coo’s in her coo’s, and the infant’s pain in her own furrowed brow. This empathic mirroring takes place between parent and healthy child, and helps the child learn about emotions. The growing person learns to generalize patterns of emotional manifestations so they can be identified in other people, artwork, and ultimately, objects. For example, an individual may learn that a relaxed-shouldered posture accompanies calmness, and that curtains are often thought to hide emotional secrets. Both these ideas may be echoed in a good theater, by the relaxed hanging curtain that calmly covers the stage’s secrets—secrets to be revealed only as the performance begins.

Buck’s (1984) landmark review of the area of nonverbal communication research examined several measures of interpersonal communication that arguably involved considerable emotional information. He concluded that the measures were not terribly reliable and, despite superficial similarities,

measured different things. In 1990, our (Mayer, DiPaolo, & Salovey, 1990) first empirical paper on emotional intelligence examined measurement of emotional perception across a variety of stimuli. We suggested that small modifications in tasks, such as those reviewed by Buck, would make them far more reliable, which turned out to be the case. We also studied emotional perception not only in faces but, drawing on the aesthetics literature, added color and abstract designs among our stimuli. Individual differences in emotional perception formed a single factor that was correlated with empathy. In its own way, the emotional perception subfactor of emotional intelligence has been the easiest to measure. Subsequent studies indicate that the same factor accounts for perceiving voice timbre, music, designs, landscapes, faces, and many other stimuli (Davies, Stankov, & Roberts, 1998, Study 1). This contrasts with the second factor of emotional intelligence, which is much more complex.

Emotional Integration

After emotion is perceived, emotion may facilitate the cognitive system at basic levels of processing. The “emotional integration” branch focuses on emotion’s basic contributions to reasoning. There are several central suggestions as to how emotion may help cognition.

First, emotion may provide interrupts and prioritizations of problems (Easterbrook, 1959; Mandler, 1975; Simon, 1982). Consider a student deep in concentration in the library. His concentration is so powerful that he mentally leaves behind the linoleum floor, the surrounding stacks, and the fluorescent lights. Nonetheless, he may sense a slowly mounting anxiety and, on hearing the ring of a distant office telephone, remember that he promised to call his parents at about that time. That interrupting anxiety represents, in some sense, a second processing system that operates independently of the central cognitive system—allowing cognition to commit a large array of resources to a logical problem until and unless the urgently competing response is plainly noticeable.

A second, allied way emotion facilitates cognition is, arguably, by operating as a second memory store about emotion itself. For example, if a visual artist wants to communicate regret in a painting or photograph, he or she may recall an experience of regret and recreate the feeling as an “on-line” experience. The heavy, dark feeling of having made a wrong choice, combined with the light, airy feeling of the many alternatives of life, could be used to construct a highly communicative contrast in light

and dark that represents the feeling better than if it were not recreated as a mental experience to be examined in all its detail.

A third way in which emotion may contribute to intelligence is through the act of mood shifting or cycling. Each mood change refreshes or resets the cognitive system, so that over time all its tools are brought to bear on a problem. This may be true especially for people high in emotionality—those who rapidly alternate between moods. The consequent shifts in judgment may enhance functioning by increasing motivational direction. For example, when things are going well, goals appear more positive and desirable, thus keeping up motivation to continue as in the past. When things go poorly, however, goals are reduced in attractiveness. Moreover, in bad moods, detailed processing is enhanced, perhaps so as to encourage new learning and new perspectives (Ketalaar & Clore, 1997, p. 364; Palfai & Salovey, 1994). The cycling between different moods also leads to different perspectives on problems and, as a consequence, appears related to creating a wider and perhaps more creative set of plans (Mayer, 1986; Mayer & Hanson, 1995).

A fourth way mood can assist thought is by representing implicit information about earlier experiences. Many of us have listed the pros and cons of a decision, only to remain unsure of which alternative is better. In such a case, it makes sense to check one's feelings about which alternative one wants to choose. Feelings about alternatives may provide a summary of the emotional memories associated with alternatives, in cases where the individual memories are no longer available. Feelings toward these alternatives may summarize past experiences—real and imagined—in such settings. The feeling intensity reflects an associative networks of memories that convey information (Bower, 1981; Schwarz & Clore, 1988, p. 46); this is done by retrieving relevant cognitive schemas and other knowledge structures about the alternatives without any necessary conscious recall of them (Banaji & Greenwald, 1995). For example, the fact that one prefers summer barbecues over a visit to the dentist may not require the retrieval of individual instances. This principle may apply to choosing between a career in law versus one in education, in which one's feeling may summarize many emotional encounters with courtrooms and arguments on the one hand, and classrooms and lectures on the other.

Understanding Emotion

Understanding emotion is the branch closest to that of a traditional intelligence. We hypothesize that a mental processor exists that specializes

in understanding, abstracting, and reasoning about emotional information. This processing involves labeling feelings, understanding the relations they represent, how they blend together, and the transitions they go through over time. For example, a person must label a feeling they feel, such as “joy.” Having labeled it, they must also be able to discern that joy generally reflects a harmonious relationship with others. If the joy is coupled with feelings of acceptance, then it might describe love. Knowing this involves expert knowledge. Similarly, understanding emotional transitions and progressions means recognizing, for example, that joy, acceptance, excitement, and surprise may describe the early stages of falling in love, whereas those feelings are likely to give way to some inevitable disappointments and frustrations thereafter, followed by a more stable joy and acceptance later, often coupled with admiration and thankfulness. Emotional understanding involves comprehending many such possible emotional relations, transitions, and progressions.

Management of Emotion

The last branch of the 1997 emotional intelligence model involves the management of emotion for personal growth. The management of emotion begins with being open to emotion. If emotions are informative, then opening oneself to such information will enable one to know more about the surrounding world—particularly the world of relationships—than if one were closed. People open to anger better identify personal injustices; people open to sadness better understand helpless losses that all humanity must face. Such openness also enhances the good: Who can truly appreciate life’s blessings without understanding life’s injustices and losses?

Management does not end with openness, of course. The open-to-feeling person must use the knowledge gained from the perception, integration, and understanding of emotion (the first three branches) in order to manage emotion optimally. Only by perceiving and understanding emotions can one understand the outcomes of experiencing them or cutting them off. For example, if a loved-one dies, good emotional management involves allowing a grief reaction to the death, and not trying to cover it up all the time at work. Rather, one would manage around it. For example, explaining to coworkers what is going on and making arrangements at work to any degree possible. Similarly, if one were angry, it would be important to determine from what, and if possible, address it. If it were impossible or unreasonable to address the anger, one might choose to mask it from others, but one would not want to disconnect from it, because it serves as a source

of information about oneself and about the target of anger. Rather, one would want to keep it, if real, and if lucky, transform it somehow, through personal activity and understanding.

The exact manner in which emotions are managed with emotional intelligence is left open in the theory. Intelligences permit plasticity, and allow a person to imagine and evaluate new possibilities with their own aims in mind. Although one hopes most may manage their emotions well—for both their personal and the common good—some emotionally intelligent people may manage their feelings in more negative ways: to manipulate, control, and exploit themselves and others.

EMOTIONAL INTELLIGENCE AS A STANDARD INTELLIGENCE

Measuring Emotional Intelligence as an Ability

The development of emotional intelligence involved both the construction of the theoretical model previously discussed and of measurement procedures to accompany them (e.g., Mayer, DiPaolo, & Salovey, 1990; Mayer & Geher, 1996). Intelligence is assessed almost entirely by ability tests. People who take ability tests perform relevant mental tasks in a controlled setting so as to gauge their optimal mental performance. Ability tasks measure something different than a person's self-report or self-conception of intelligence. Although self-report tests are relatively briefer and easier for participants to take than ability tasks, they show very low test-to-test relationships with ability scales (e.g., $R=.15-.30$; Paulhus, Lysy, & Yik, 1998). For these reasons, ability tests are viewed as the standard in the field of intelligence.

Emotional intelligence, too, can be measured as an ability. Although self-report scales of the concept exist and measure important outcomes, they perform quite differently than ability measures. For example, they correlate with overall mood and social desirability, and do not relate to other intelligence measures (e.g., Mayer & Stevens, 1994; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; see Mayer, Salovey, & Caruso, 2000, for a review).

A number of early tests of individual abilities at emotional intelligence exist, both under that label (e.g., Davies, Stankov, & Roberts, 1998; Mayer, DiPaolo, & Salovey, 1990; Mayer & Geher, 1996), and other names such as *emotional creativity* (e.g., Averill & Nunley, 1992), *emotional awareness* (Lane et al., 1996), and others (e.g., Simon, Rosen, & Pomipom, 1996).

Most of these early studies examined just one emotional intelligence task at a time—for example, examining the ability to perceive emotion in faces.

The establishment of an intelligence, however, requires examining many different skills to which the intelligence may contribute. That is because, for an intelligence to exist, its skills must be intercorrelated, the intelligence must be related to but distinct from general intelligence, and it must develop with age. Demonstrating these characteristics requires examining many tasks together, as they are performed by people of different ages.

A Description of the MEIS

To understand whether emotional intelligence exists, my colleagues and I have developed the Multifactor Emotional Intelligence Scale MEIS (Mayer, Salovey, & Caruso, 1999), and a successor scale, the Mayer-Salovey-Caruso Emotional Intelligence test MSCEIT (Mayer, Salovey, & Caruso, 1999). Research work to date has focused on the MEIS, with the MSCEIT being so new that information about it is only now beginning to come in. For that reason, I focus here on findings with the MEIS.

The MEIS is composed of 12 tasks believed, on the basis of our revised theory (Mayer & Salovey, 1997), to assess the four broad areas of emotional intelligence just described in the previous section.

The first group of MEIS tasks, Emotional Perception, asks people to identify emotions that are present in a variety of stimuli. For example, there are subscales concerned with identifying emotions in faces, music, abstract designs, and stories. A group of items from this section might ask people to identify how much happiness, anger, fear, and other feelings might be present in a face. Each emotion is followed by a 5-point scale (with 1 anchored by “none” and 5 anchored by “an extreme amount”) to which the participant responds.

The second group of tasks, Emotional Integration, of the MEIS asks people to compare emotional sensations with other mental phenomena, as well as to understand how emotions might change thought. For example, the Synesthesia task asks people what color “Anger” is, as well as how “Sweet” it is, and so on.

The third group of tasks, Understanding, asks people a number of questions about their understanding of feelings. For example, the “Blends” task asks people such questions as the following:

Contempt most closely combines which two emotions?

- (1) anger and fear
- (2) fear and surprise
- (3) disgust and anger
- (4) surprise and disgust

And the “Progressions” task asks such questions as the following:

If you feel guiltier and guiltier, and begin to question your self-worth, you feel:

- (1) depression
- (2) fear
- (3) shame
- (4) pity

The fourth group of tasks, Managing Emotions, presents people with a situation and asks them what is the best social response for managing the feelings of the situation. For example, in the “Managing Others” task, items describe a social situation to which the test-taker must respond. In one such item, for example, a coworker says he lied on his job application to get a job, and it has been bothering him. The test-taker is asked to evaluate various alternatives for handling the situation so that the coworker’s emotional difficulties are properly managed.

Scoring the MEIS

Scoring of the MEIS tasks can be performed according to different approaches. Our research (Mayer & Geher, 1996; Mayer, Caruso, & Salovey, 1999) indicates that the best way to do this is to use consensus scoring. According to this method, the individual obtains an item score based on the proportion of people in the standardization sample who agree with the answer. For example, on the Progressions question above (e.g., if a person felt guiltier and guiltier and questioned his or her self-worth...), if .37 of the sample said that “depression” (answer “1”) was the correct answer, then a person responding that way would receive a .37 for that answer. If they answered “fear” (answer “2”) and only .05 of the sample responded that way, they would be credited with .05 for that answer.

Findings with the MEIS

Findings with the MEIS strongly support the existence of an emotional intelligence that can be measured reliably. Factor analyses of the MEIS

scale indicate that it can be modeled in two complementary fashions. First, a single general factor can be used to describe the test. From this perspective, the test measures a single General Emotional Intelligence factor, which represents considerable variance of each of the 12 specific tasks. (This general factor is similar to the first factor of a principal axis extraction.) The complementary, more fine-tuned approach, breaks the scale down into three or four intercorrelated factors. The three strongest factors are (a) Emotional Perception, (b) Emotional Understanding, and (c) Emotional Management. These factors correspond very closely to three of the four areas of skill proposed in the central theory of emotional intelligence (Mayer & Salovey 1997). Covariance structural modeling suggests the possibility that a fourth factor reflecting (d) Emotional Integration might also be possible to measure. Details on how to obtain each factor model can be found in our empirical report (Mayer, Caruso, & Salovey, 1999).

Such results indicate that it makes sense to talk about an overall emotional intelligence level as well as to break it down into abilities at emotional perception, understanding, and management. All the individual subscales as well as the overall test are highly reliable. The overall test has an alpha reliability of $r=.96$; those for the subscales range from between $r=.81$ to $.96$. Overall emotional intelligence, measured as shown previously, correlates $r=.36$ with a measure of Verbal IQ, and about $r=.33$ with a measure of self-reported empathy. Such results suggest that emotional intelligence is sufficiently related to preexisting intelligences to qualify as an intelligence while being sufficiently distinct to be worth measuring on its own. In addition, developmental studies have shown that there is a temporal progression to emotional intelligence, as with general intelligence, wherein adolescents are outperformed by young adults. This appears to qualify emotional intelligence as a standard intelligence.

One study with the MEIS replicated many of the previously described findings. In addition, the MEIS was related to life satisfaction, even after controlling for IQ and personality traits. The MEIS was also related to people's ability to manage their moods (Ciarrochi, Chan, & Caputi, 2000). These findings, and others presently being obtained, suggest that the EI construct is distinctive and useful. Moreover, it may predict important aspects of good behavior that have been difficult to assess before (Mayer, Caruso, Salovey, in press).

DISCUSSION AND CONCLUSION

The field of cognition and affect provided some of the foundation for a new theory of emotional intelligence. As cognition and affect researchers

examined how emotion changed thought, they took over the mantle from clinical researchers who had stressed how emotions pathologized thought. Researchers in cognition and affect began to normalize such phenomena, finding them in everyday behavior. Emotional intelligence focused especially on how emotion and intelligence mutually facilitate one another to create a higher level of thought, information processing of emotion, and, potentially, to improve feelings as well.

During the 1990s, a central model of emotional intelligence was developed that viewed it as an intelligence that processes emotional signals about relationships. Emotional intelligence involved the capacity to reason with emotions, particularly to perceive, integrate, understand, and manage emotions (Mayer & Salovey, 1997; 1993; Salovey & Mayer, 1990). Measures of emotional intelligence were developed concurrently, and these show great promise for assessing and validating the theoretical model (Mayer, DiPaolo, & Salovey, 1990; Mayer, Caruso, & Salovey, 1999).

Exactly what emotional intelligence predicts is presently a matter of considerable research interest. Findings with ability tests are as-of-yet sparse, and include positive correlations with empathy and intelligence scales (at about $r=.35$ levels), as well as with retrospective reports of parental warmth. It also appears related to well-being and the ability to regulate one's mood. The level of ongoing research now taking place suggests that various predictive studies are forthcoming.

In addition, very little is understood about the mental processes underlying emotional reasoning. There are many opportunities for the experimental study of mental processes underlying emotional reasoning. For example, researchers may wonder whether emotional reasoning is improved or impaired by different mood states, and if so, how? They may wish to study whether experimental analogs of mood swings (e.g., happy-sad-happy-sad mood inductions) can indeed improve or broaden a person's plans, or how physiological states correspond to self-reports among those who are high versus low in emotional intelligence. There are already many studies of expert knowledge related to emotion. In fact, much of the area of cognition and affect (and of emotions research) is creating and synthesizing such expert knowledge. In the future, researchers may wish to know more about how expert knowledge of emotion develops and is stored. Still other researchers may wish to turn to emotional intelligence itself—how it relates to other intelligences, and what it might predict in regard to personal and social outcomes.

Although we do not yet know much about what emotional intelligence might predict, its very existence promises a changed perspective on some

matters. It promises that, among some people whom we call warm-hearted or romantic, some sophisticated information processing is going on.

At the outset, I noted that one of the contributions of the area of cognition and affect was to view emotions and cognition as interacting in normal rather than pathological ways. There is also the opportunity to apply what is learned to clinical populations. In the case of emotional intelligence, it is apparent that people's emotional afflictions are sometimes a consequence of improper perceptions, integrations, and understandings of emotions. Given such troubles, it is little wonder such people find it difficult to manage their feelings. Perhaps some of the previously described research will be useful to better help people construct a more accurate understanding of their emotions, and to build a better approach to managing their feelings. In the long run, such understandings could improve all our lives.

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