CHARACTER STRENGTHS AND VIRTUES

A HANDBOOK AND CLASSIFICATION

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15. SOCIAL INTELLIGENCE

[Emotional Intelligence, Personal Intelligence]

People who are high in emotional intelligence, one of the positive traits discussed in this chapter, exhibit special capacities in regard to experiencing and strategizing about emotion. They are adept at perceiving emotions in relationships, and they display a keen understanding of their emotional relationships with others, as well as of the meanings of emotions in those relationships. Such emotional understanding is exhibited by a 16-year-old young woman whose emotional intelligence was tested as part of a study of teenagers and the conflicts they experience with their peers. She was the highest scorer in the group. Here she describes a conflict she had with some friends. The follow-up questions asked by the interviewer appear in square brackets.

Once my friends wanted to sneak in someone's room and paint them while he slept. It began as joking around ("wouldn't this be funny"; "could you believe it if?"). Then it slowly evolved into dares ("I bet you wouldn't," or "I dare you to"). I felt like it was betraying the trust I had with the other person, I didn't feel right with sneaking up on a sleeping person with no way to defend himself, and I thought doing this would make the person have his feelings hurt. I know how little pranks like this could really hurt someone's feelings, make them feel like everyone is making fun of them, taking away their dignity and disrespecting them. I won't do that to someone because I understand how badly that can hurt. [How did you handle it?] Told them straight out that it was a degrading thing to do and they shouldn't be so cruel. Asked them how they would like it? [Relation to long-term goals?] I'm not sure. One of my everyday goals is to try my hardest not to judge or make fun of someone. [Parents' reaction?] They would have been proud, but it's just one of those things that sort of never gets talked about because they would have also said, I ruined a perfectly harmless joke. [Parents' goals?] My parents want me to be respectful (Mayer, Perkins,

Caruso, & Salovey, 2001, p. 136; see also Vitello-Cicciu, 2001, for similar cases among nurse managers). n

■ Consensual Definition

Intelligence refers to the ability to think abstractly—to understand similarities and differences among things, to recognize patterns, and to see other relations. Intelligence can be divided into subtypes that focus on a specific area of reasoning. For example, cognitive intelligence divides into verbal, perceptual-organizational, and spatial intelligences, among others (J. B. Carroll, 1993). There also exists a group of hot intelligences, so called because they process "hot" information: signals concerning motives, feelings, and other domains of direct relevance to an individual's well-being and/or survival. Three such intelligences are reviewed here: personal, social, and emotional intelligence. Collectively, these intelligences are concerned with the ability to carry out abstract reasoning in the domain of hot information. Hot information—and the hot intelligences that interpret that information—concern information of direct personal relevance for survival and well-being (Mayer & Mitchell, 1998).

Intelligences concern the broader capacity of the person to carry out abstract reasoning. This capacity is independent of a person's self-concept. For example, it is possible for a person to think of herself as intelligent and yet to be without the capacity to reason effectively. Empirical studies have repeatedly shown that self-estimated intellectual abilities do not bear a close relation to actual abilities (D. L. Paulus, Lysy, & Yik, 1998). For that reason, intelligences are typically defined in terms of actual performance at problem solving. People who are high in hot intelligence are said to be able to perform certain tasks well, such as the following:

- identify emotional content in faces, voices, and designs (emotional intelligence)
- use emotional information to facilitate cognitive activities (emotional intelligence)
- understand what emotions mean regarding relationships, how they progress over time, and how they blend with one another (emotional intelligence)
- understand and manage emotion (emotional intelligence)
- accurately assess one's own performance at a variety of tasks (personal intelligence)
- accurately assess one's own emotions and feelings (emotional, personal intelligence)
- accurately assess one's own motives (personal, social intelligence)
- use social information to get others to cooperate (social intelligence)

- identify social dominance and sociopolitical relationships among individuals and groups (social intelligence)
- act wisely in relationships (social intelligence)

Emotional intelligence concerns the ability to use emotional information in reasoning. Such emotional information can be of internal or external origin. Personal intelligence involves accurate self-understanding and self-assessment, including the ability to reason about internal motivational, emotional, and, more generally, dynamic processes. Social intelligence concerns one's relationships with other people, including the social relationships involved in intimacy and trust, persuasion, group memberships, and political power. Conceptually, the three intelligences described here overlap, but empirically the degree of overlap is not well understood.

Theoretical Traditions

The term *intelligence* has a long history. In the Western world, the cognitive sphere was first split off from other ideas such as aesthetics by the ancient Greeks (Burt, 1955). The advent of intelligence testing in the 1900s lent a more modern shape to the concept of intelligence, and by 1921 a half dozen or more definitions of intelligence were offered up in a symposium recorded in the *Journal of Educational Psychology* ("Intelligence and its measurement," 1921). Therein can be found E. L. Thorndike's definition of intellect as "the power of good responses from the point of view of truth or fact" (p. 124); L. M. Terman's statement that "an individual is intelligent in proportion as he is able to carry on abstract reasoning" (p. 128); and L. L. Thurstone's more complex formulations (p. 204). Others, such as S. L. Pressey, were content simply to measure intelligence and observe what intelligence tests predicted (p. 144). A more recent symposium of intelligence researchers followed along similar lines, highlighting that intelligence involves, above all else, abstract reasoning and, secondarily, adaptation (Sternberg & Detterman, 1986).

Beyond definitions, much effort has been expended to determine whether there is one or more than one intelligence (e.g., N. Brody, 2000; H. Gardner, 1983). This is an issue concerning the degree to which performances on different sorts of tasks are correlated. If all mental performances rose and fell in lockstep, then it would be convenient to describe the aggregate: one intelligence. If, on the other hand, each mental performance was independent of the others, then each one would represent its own individual intelligence, and it would not make sense to speak of a general intelligence. The reality, as it turns out, is midway between these two extremes. It is generally appropriate to model human performance either as a single ability or as multiple abilities. The single ability is roughly the average of such performances. More precisely, it represents a

single statistical factor that underlies all mental performance. Multiple intelligences arise, on the other hand, when one chooses to split up mental performance into subsets. It is from such splits that one arises at such concepts as multiple intelligences: "verbal intelligence," "perceptual-organizational intelligence," "spatial intelligence," and the like. Each adjectival term—*verbal*, *perceptual*, *spatial*, and so forth—defines the area to which the intelligence applies. For the purposes of this chapter, one important division among intelligences is the broad division between the intelligences that are cognitive, or "cold," on the one hand, and intelligences, that are "hot," or that focus on motivation, emotion, or other personal and social issues, on the other (Mayer & Mitchell, 1998).

Of the hot intelligences, social intelligence has the longest scientific lineage. Social intelligence was first described by Thorndike (1920), who defined it as "the ability to understand and manage men and women, boys and girls—to act wisely in human relations" (p. 228). Fairly soon after its introduction, research on the topic began, and it has been pursued more or less continuously since then (Walker & Foley, 1973). Measures were introduced in the mid-1930s, and those, too, have been pursued to the present, albeit with concerns that they are not distinct from general intelligence (Cronbach, 1960).

The next of the hot intelligences, the personal intelligences, has a more recent lineage. In his influential book *Frames of Mind: The Theory of Multiple Intelligences*, H. Gardner (1983) proposed the existence of personal intelligences and divided them into an "intrapersonal intelligence," which was mostly focused internally, and an "interpersonal intelligence," which resembled the social intelligence discussed by Thorndike and others. We will refer to intrapersonal intelligence here simply as personal intelligence and contrast it with the earlier-proposed social intelligence. Unlike social intelligence, personal intelligence has a very short history.

The third of the hot intelligences, emotional intelligence, was first defined and researched as a measurable concept in the early 1990s (Mayer, DiPaolo, & Salovey, 1990; Mayer & Salovey, 1993; Salovey & Mayer, 1990). The advent of emotional intelligence entailed synthesizing research findings from several loosely related areas in the psychological literature (e.g., intelligence, emotions, personality; Salovey & Mayer, 1990, pp. 189–190). Although the term *emotional intelligence* had been mentioned sporadically beforehand (e.g., Leuner, 1966; Payne, 1986), it could not be defined adequately until those various scientific literatures were connected. Part of the effort involved drawing together ability measures in such areas as nonverbal sensitivity (which includes a mix of emotional and social-relational judgments) and aesthetics and looking at the common emotional thread that ran through them (e.g., R. Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). Emotions researchers were encouraged to think further about emotion as information when computer scientists began to ask how computers could understand emotion (Mayer, 1986, 2000). The early

1990s saw the first formal definitions, formal measures, and call for research in the area.

The areas of hot intelligence have been investigated somewhat separately despite their conceptual interrelations. In fact, the ability tests presently under development to measure them have not yet been used in the same studies, and so their intercorrelations are unknown. Research on each of the three approaches to intelligence—social, personal, and emotional—can be divided into two areas: psychometric studies and componential analyses. Roughly speaking, the psychometric approach focuses on abilities and individual differences; the componential approach focuses on the knowledge structures and processes—the mental architecture—underlying the intelligence (Sternberg, 1977).

The field of social intelligence is most highly developed, having had a head start of about 60 to 70 years. At the same time, various setbacks in the study of social intelligence have led to very slow progress in the field. These failures chiefly have to do with the repeated finding that social intelligence is sufficiently similar to general intelligence as to be difficult to measure independently (for reviews of these issues, see Kihlstrom & Cantor, 2000; Walker & Foley, 1973). Enough evidence (or hope) that social intelligence is distinct has been present to ensure the development of several assessment batteries of social intelligence. Guilford's structure of intellect model provided a definition that has shaped many of the ability tasks employed to measure social intelligence today. A technical report by O'Sullivan, Guilford, and deMille (as cited in Kihlstrom & Cantor, 2000, p. 361; O'Sullivan, Guilford, & deMille, 1965) viewed social intelligence primarily as involving six areas:

- cognition of behavioral units: the ability to identify the internal mental states of individuals
- cognition of behavioral classes: the ability to group other people's mental states on the basis of similarity
- cognition of behavioral relations: the ability to interpret meaningful connections among behavioral acts
- cognition of behavioral systems: the ability to interpret sequences of social behavior
- cognition of behavioral transformations: the ability to respond flexibly in interpreting changes in social behavior
- cognition of behavioral implications: the ability to predict what will happen in an interpersonal situation

In addition to expressly psychometric approaches to individual differences in social intelligence, a good deal of research has been focused on the sorts of expert knowledge that go into being socially intelligent. For example, Cantor and Kihlstrom (1987) focus on the development of social knowledge rather than on intelligence per se. They interpret social intelligence to refer to what a person knows and does not know about his or her surrounding world and how

such knowledge shapes the individual's activities. Their approach, which has its origins in G. A. Kelly's (1955) personal construct theory, has not yet yielded any scales of general ability.

The central approach to personal intelligence is Gardner's theory of multiple intelligences. Gardner's (1983) original theory stated that there are at least seven kinds of intelligence, each associated with a different brain system and, consequently, potentially unrelated to one another (chapter 3). As noted earlier, Gardner postulates two personal intelligences: one intrapersonal (personal) and the other interpersonal (social). Gardner joins these two intelligences because he views them as forming an integrated whole. Here we attempt to separate out aspects relevant to intrapersonal, or simply personal, intelligence, as we already have covered social intelligence. Personal intelligence is said by Gardner to involve the following five areas:

- access to internal signals, particularly emotions and moods
- knowledge of how well the individual performs at various tasks
- an understanding of one's own mental processes
- an emerging identity that entails a sophisticated delineation of the self
- a sense of self that is differentiated from others (H. Gardner, 1993b, pp. 246–252)

Gardner's list of those with high personal intelligence includes Socrates, Jesus Christ, Mahatma Gandhi, and Eleanor Roosevelt. An alternative contemporary approach takes an evolutionary perspective on personal intelligence, viewing it as an active information-gathering process concerning one's internal processes (Park & Park, 1997).

The ability model of emotional intelligence views it as the capacity to think intelligently about emotions and the capacity of emotion to enhance intellectual activities (Mayer & Salovey, 1997; Mayer, Salovey, & Caruso, 2000; cf. Salovey & Mayer, 1990; Salovey, Mayer, & Caruso, 2002).[1] More specifically, emotional intelligence skills are divided into four parts or branches (often referred to as the four-branch model; Mayer & Salovey, 1997):

- perceiving emotions: the ability to perceive emotions in oneself and others accurately (Branch 1)
- using emotions to facilitate thought: the capacity to integrate emotions in thought and to use emotions in a way that facilitates cognitive processes (Branch 2)

[1]Emotional intelligence has undergone a number of popularizations, for example, in a best-selling trade book (Goleman, 1995). As can be the case, a variety of popular and commercial reinterpretations of emotional intelligence ensued—some heavily marketed. These models mix together various personality characteristics such as reality testing, assertiveness, persistence, and the like that do not pertain specifically to either emotion or intelligence, or their combination. Such models are reviewed and analyzed elsewhere (Matthews, Zeidner, & Roberts, 2002; Mayer, 2001; Mayer, Salovey, & Caruso, 2000).

- understanding emotions: the capacity to understand emotional concepts and meanings, the links between emotions and the relationships they signal, and how emotions blend and progress over time (Branch 3)
- managing emotions: the capacity to monitor and regulate emotions for personal and social growth and well-being (Branch 4)

As will be seen, most studies of the four-branch model have focused on the measurement of individual differences in emotional intelligence. As with social intelligence, however, there is an extensive body of literature on the psychological processes underlying each area of emotional intelligence (see Feldman-Barrett & Salovey, 2002). There also exist alternative, self-report approaches to its measure (e.g., Salovey, Woolery, & Mayer, 2001).

Measures

As a matter of definition, intelligence is conceptualized as an ability or capacity. For that reason alone, the preferred method of measuring intelligence is through measures of mental performance. The well-known predictive validity of verbal and perceptual-organizational intelligence tests for school and job performance has been established exclusively on the basis of ability testing techniques. Indeed, such ability measures yield unique variance that is at best poorly approximated by self-reports of intelligence (D. L. Paulus et al., 1998). Ability measures of hot intelligences such as emotional intelligence also yield unique variance and are only poorly approximated by self-report (Brackett & Mayer, 2003; Salovey, Mayer, Caruso, & Lopez, 2003). One place where self-report may be useful is in personal intelligence, which is sometimes operationalized as the discrepancy between self-assessment and actual performance. This review of measures will focus on ability measures of the hot intelligences and proceed according to the chronological introduction of the intelligences: social, personal, and emotional (Table 15.1).

The primary contemporary scale of social intelligence was developed by Jones, Day, and colleagues (Jones & Day, 1997; J. E. Lee, Wong, Day, Maxwell, & Thorpe, 2000). In the scale tasks, participants interpret videos of people's actions or interpret social phraseology (e.g., forms of politeness) according to the context in which it might be used. Factor analysis of the tasks suggests that this scale includes separate performance measures of social knowledge and social inference, and these are said to reflect crystallized and fluid social intelligence, respectively. The performance scales show considerable discriminant validity with cognitive intelligence, with correlations between individual social and cognitive intelligence tests below $r = .20$. The Jones and Day scale draws its lineage from the O'Sullivan and Guilford studies, and two of the four tasks are drawn from that work (O'Sullivan & Guilford, 1976).

TABLE 15.1 *Measures of Social, Personal, and Emotional Intelligence*

Social Intelligence

Factor-Based Social Intelligence Tasks

Jones & Day (1997)

- Reliability: internal consistency (alpha coefficient): .52–.86
- Test–retest reliability: unknown
- Validity: content valid; discriminant validity vis-à-vis cognitive IQ

Personal Intelligence

Psychological Mindedness Assessment Procedure

McCallum & Piper (1997)

- Reliability: interrater reliability: .88–.96
- Test–retest reliability: unknown
- Validity: predicts better psychotherapy outcome in settings where psychodynamic psychotherapy is practiced

Emotional Intelligence

Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)

Mayer, Salovey, & Caruso (2002)

- Reliability: internal consistency (split half): overall: .91–.93; area subscales = .86–.90; branch subscales = .76–.91
- Test–retest reliability: .86
- Validity: content valid in relation to the four branch model of emotional intelligence; tests of structural validity indicate one overall factor, two area-level subfactors, and four branch-level subfactors that correspond to the test's primary scales and subscales; discriminant validity studies indicate the test is distinct from cognitive IQ and self-reports of empathy; predictive validity indicates that, among other findings, heightened emotional intelligence relates to fewer problem or deviant behaviors (see text)

The tests available for personal intelligence are the weakest of those measuring the three intelligences. When Gardner proposed his theory of multiple intelligences (in which intrapersonal and interpersonal intelligences were first discussed), he discouraged the use of traditional psychometric tests, relying instead on conceptual and neurological arguments for their existence. Nonetheless, some empirical measures were developed by others. An early empirical assessment of these measures gave rise to the development of two apparently similar tests with different names (Plucker, Callahan, & Tomchin, 1996). One is the Discovering Intellectual Strengths and Capabilities through Observation while allowing for Varied Ethnic Responses (DISCOVER) test. The other is the Problem Solving Assessment Technique (PSA; Reid, Udall, Romanoff, & Algozzine, 1999). Although both tests stemmed from batteries originally intended to measure multiple intelligences, the focus was on interpersonal intelligence (clos-

est to social intelligence). Factor structures of the test indicated that interpersonal intelligence (like early measures of social intelligence) merged into verbal-linguistic intelligence measures (Plucker et al., 1996). As a consequence, both the DISCOVER and the PSA are now said to measure only linguistic, spatial, and logical-mathematical intelligences. The current test development emphasis (as implied by the DISCOVER test's name) has focused on looking at different responses that might reveal intelligence across ethnic groups. This is a noble goal. Regrettably, however, the tests fall somewhere between inconclusive and irrelevant regarding Gardner's personal intelligences (Sarouphim, 1998, 2000).

A test that may be more promising for personal intelligence is the Psychological Mindedness Assessment Procedure (McCallum & Piper, 1987), a performance test in which the participant watches a series of videotaped vignettes and must answer the question "What seems to be troubling this woman?" The responses are scored according to the sophistication of the viewer's response. One difficulty is that the responses are calibrated according to a psychodynamic viewpoint. Those who employ alternative theoretical perspectives on personality may question the validity of the scoring key. On the other hand, the nature of personal insight involved in personal intelligence is likely to include some psychodynamic formulations. Gardner viewed Freud's development of psychodynamic theory as an instance of personal intelligence in operation. The McCallum and Piper scale is reliable and shows good evidence of validity in predicting therapy outcome (e.g., Piper, McCallum, Joyce, Azim, & Ogrodniczuk, 1999). For these reasons, it may be uniquely promising among currently available measures of personal intelligence.

Finally, in the case of emotional intelligence, the central performance test in the area is now the Mayer-Salovey-Caruso Emotional Intelligence Test, or MSCEIT. This test has grown out of a series of studies on assessing emotional intelligence as an ability. Early performance tasks demonstrated the existence of reliable individual differences in emotional perception and related them to criteria such as empathy and emotional openness (Mayer et al., 1990; Mayer & Geher, 1996). Some were discouraged by the apparently modest reliabilities of the early scales but agreed that they assessed a new source of individual differences (Davies, Stankov, & Roberts, 1998). Those early scales were next incorporated into a more comprehensive measure, called the Multifactor Emotional Intelligence Scale (MEIS). The MEIS contained 12 individual tasks of emotional intelligence keyed to the four-branch model of emotional intelligence (see earlier discussion). This scale met customary psychometric standards for a new instrument, with an overall coefficient alpha reliability of above $r = .96$. Factor analyses indicated that there existed a general factor of emotional intelligence and that subfactors roughly corresponding to the four-branch model also were justified. Emotional intelligence was related to but different from both cognitive intelligence and self-reported empathy (Mayer, Caruso, & Salovey, 1999). The MEIS test was, however, quite lengthy. A revised version of the test—the

MSCEIT V2.0—achieved a reliability of above $r = .90$ and now has been standardized on a sample of 5,000. It is a more convenient length for research, involving a 30- to 45-minute administration, and it offers expert scoring based on a sample of 20 PhD-level emotion specialists (Mayer, Salovey, Caruso, & Sitarenios, 2003). The test possesses content and factorial validity (Mayer, Perkins, Caruso, & Salovey, 2001; Mayer, Salovey, & Caruso, 2002; Mayer et al., 2003). Its predictive validity is discussed in the following.

■ Correlates and Consequences

Among the three intelligences examined here—social, personal, and emotional—the most is known about what emotional intelligence predicts, and that is not saying much. Research on social intelligence remains focused on demonstrating its independence from cognitive intelligence. Thus, the most recent studies in the area by Wong and colleagues have mostly employed multitrait, multimethod approaches in an attempt to determine whether social intelligence can be separated from general cognitive intelligence (J.-E. Lee et al., 2000). Now that these demonstrations have established the existence of a separate social intelligence, future research can turn to examining the relations between social intelligence and various outcomes of importance.

If personal intelligence is taken as the ability to understand one's performance more accurately (i.e., a correspondence between one's actual ability and the degree to which one understands that ability), then there are relevant findings as well. Research consistently indicates that those people who have relatively realistic appraisals of their ability in a given area perform better at their chosen occupations than those who do not (Bandura, 1997).

Although emotional intelligence was the most recent of the hot intelligences to be introduced, it has also surpassed the others in the number of published research studies examining it. Since the development of the MEIS and more recent MSCEIT, there has been a gradually increasing emphasis on discovering what these tests might predict. We examine two areas: test-to-test correlations, and test-to-external-life-criteria correlations. Test-to-test correlations using tests measuring similar or related constructs are generally expected to be fairly high, for example, above $r = .50$. Emotional intelligence, measured as an ability, appears relatively independent of other personality and intelligence tests (Brackett & Mayer, 2003; Caruso, Mayer, & Salovey, 2002; Ciarrochi, Chan, & Caputi, 2000; Mayer, 2000). Correlations between the MSCEIT (or MEIS) and the Big Five traits and other measures are generally between zero and $r = +/-.30$, occasionally rising to $r = .35$ for measures of self-reported empathy and verbal intelligence. This is exciting because it indicates a new variable is being measured.

Test correlations with external criteria—life surveys, life behaviors, and actual observed behavior—are expected to be in the $r = .10$ to .40 range. This is because surveys of individuals' actual lifestyles, possessions, memberships, and the like represent the diversity and complexity of everyday life, unfiltered through a simplified self-concept. The correlations are also lower because such surveys ask detail-based questions that must be aggregated (relative to personality tests) to obtain comparable reliability (Mayer, Carlsmith, & Chabot, 1998). At the same time, these small relationships can make extremely important differences in real-life applications (Rosenthal & Rubin, 1982). Within that context, the findings for emotional intelligence are very exciting—albeit preliminary. The preliminary nature of these findings is reflected in the fact that some of the ensuing references are to unpublished senior honors, master's, and dissertation theses. With that qualification, the early evidence suggests that people high in emotional intelligence exhibit patterns of modestly better life judgment and smoother social functioning. People higher on the emotional understanding scale of emotional intelligence show more adaptive defense styles (Pelletteri, 1999). In student populations, emotional intelligence appears to predict lower levels of drug and alcohol use, particularly among men (Brackett & Mayer, 2003; Brackett, Mayer, & Warner, in press; Formica, 1998; Trinidad & Johnson, 2002) and lower levels of interpeer aggression (Formica, 1998; Mayer et al., 2001; M. M. Rubin, 1999). In business settings, people with higher emotional intelligence may provide better customer service (C. L. Rice, 1999). The findings concerning lower problem behaviors such as drug use and aggression seem to represent a pattern. The remaining findings probably are too new to elicit strong confidence, but they suggest potentially promising areas for future research.

■ Development

Little is known about the development of the hot intelligences. For the time being, it makes sense to compare them to traditional—general—intelligence. As research continues, this comparison may require some qualifications. Early on, general intelligence was recognized to reflect a rate of mental growth: a certain level of mental attainment in relation to chronological age. The first intelligence quotients were called *rate IQs* because they reflected a rate of growth, be it average, slower than average, or faster (Stern, 1914). The average person learns about the world in a regular, persistent fashion over time, gradually building up knowledge. The lower-than-average individual lags behind, whereas the higher-than-average individual pulls ahead. The original rate IQs, and the deviation IQs that came after them (and which were calculated in a different way), tend to be grossly, coarsely, stable across the life span. Put another way, extremely high scorers almost always continue to score high; extreme low scor-

ers, regrettably, rarely do better, but there is some room for meaningful change in the broad middle.

The development of general intelligence is often divided into two parts: the raw capacity, speed, and fluidity of learning, called *fluid intelligence*, on the one hand, and the pool of accumulated knowledge acquired by an individual, called *crystallized intelligence*, on the other. Fluid intelligence refers to the capacity to learn, analyze, and understand at the moment. It is often associated with the developmental, neurological health of the individual. Crystallized intelligence, in contrast, refers to the accumulated expert knowledge a person acquires in various fields (Cattell, 1943). Crystallized intelligence is generally the more stable of the two, and recent work by Ackerman (1997) has gone some way toward understanding the sorts of crystallized knowledge structures involved. It appears possible that the fluid-crystallized division would apply to the hot intelligences as well. For example, in the case of emotional intelligence, the perception of emotion might be relatively fluid and depend on the mental activities of the moment, whereas the understanding of emotional meanings and relationships might be acquired over time and be more identified with a crystallized aspect. Fluid intelligence in the cognitive realm can be affected by such issues as fatigue and anxiety. Factors related to fluid intelligence in hot intelligences are unknown as of yet.

A good deal has been written on the psychological development involved in the hot intelligences, and it is impossible to review it all here. Saarni (1999, 2001), in particular, has summarized the early childhood development of social and emotional competencies. H. Gardner's (1983) work on the personal intelligences covers both child and adult development. Erikson's (1963) essay on the Eight Ages of human beings remains a classic in this regard. Although these authors make relatively specific age-based discriminations, our summary will address four times of life: (a) infancy and toddlerhood, (b) middle childhood, (c) adolescence, and (d) adulthood. The following summary closely follows descriptions by Saarni, Gardner, and Erikson.

Infancy and toddlerhood are periods during which the young child begins to assemble a group of mostly unintegrated but critical abilities that will serve as foundations for later development. These include, most internally, the ability to sense positive and negative mood states, the emergence of consciousness and self-awareness, and the ability to symbolize awareness and feelings and call them by their names. More socially, the individual begins to learn to play games with others, such as peekaboo; she or he learns to engage in pretend games and also to simulate distress and crying to gain attention. The young child also begins to learn some important forms of self-control, including patience, sharing, and temper management. The child also begins to empathize with others.

In middle childhood, greater and more integrated self-regulation of emotional, personal, and social qualities is present, with a particular emphasis on "fitting in" and achieving. During this time, the child may adopt a "cool" front

with peers and be particularly sensitive to embarrassment and shame. Children focus on abilities and industries and attempt to distance themselves a bit from feelings. This requires increased coordination of social skills and a good understanding of social scripts and how they unfold. Children begin to understand that they may possess contradictory feelings toward the same person; they begin to use personal information as aid in the development of close friendships (Saarni, 2001).

With adolescence comes an increased focus on internal emotions, including the perception and recognition of emotional cycles, progressions, and metamoods (e.g., feeling guilt about feeling anger). There is a further integration of mutual communication, as well as an embeddedness of feeling and emotion in that communication. More socially, there is a focus on morality, meaning, and identity. A person may fully commit himself or herself to an ideology or cause that seems particularly important (Erikson, 1963; Saarni, 2001).

Finally, in adulthood, a number of maturational changes take place. According to Saarni (2001),

> The individual views herself or himself as feeling, overall, the way she or he wants to feel. That is, one accepts one's emotional experience, whether unique and eccentric or culturally conventional, and this acceptance is in alignment with the individual's beliefs about what constitutes emotional "balance." In essence, one is living in accord with one's personal theory of emotion. (p. 77)

At the more global level of the personal intelligences, the individual becomes mature, and this maturity involves a more sophisticated sense of self. To conclude this section with another aptly put description, we quote H. Gardner (1993b), who wrote:

> The end-goal of these developing processes is a self that is highly developed and fully differentiated from others. . . . [Individuals] appear to have understood much about themselves and the frailties of the human condition, while at the same time inspiring others around them to lead more productive lives. (p. 252)

Cognitive intelligence is generally viewed as possessing a strong genetic factor. The convergent evidence for this is fairly strong. Generally speaking, intelligence-like behavior increases over animal species according to the brain-size-to-body ratio (Jerison, 2000). Continued research indicates that intelligence is related to brain size and other physiological measures of neural efficiency among human beings (e.g., Flashman, Andreasen, Flaum, & Swayze, 1998; Schretlen et al., 2000; Wickett, Vernon, & Lee, 2000). Genetic studies, including twin studies, adoption studies, and studies of familial inbreeding, all indicate significant genetic aspects of cognitive intelligence, as it is customarily measured. The exact estimate of heritability is a matter of some controversy.

On the one hand, responsible estimates seem to have settled in the range between ratios of .50 to .78 for intelligence (Grigorenko, 2000, p. 60). On the other hand, there is a dissatisfaction about heritability estimates altogether due to new understandings of how genes work and a desire to study the genetic mechanisms of intelligence themselves (Grigorenko, 2000).

Turning to the hot intelligences, there is virtually no research related to the presence or absence of a genetic component. Genetic studies are typically reserved for clearly measured psychological components. In the case of social intelligence, the inadequate discriminant validity (in plainer terms, the difficulty of distinguishing it from cognitive intelligence) has made it an unattractive candidate for inclusion in heritability studies. Personal and emotional intelligence, on the other hand, are too new for investgators to have studied their heritability. It seems reasonable to suppose there is some genetic component to them because there is one for most psychological traits. As of yet, however, the relevant empirical evidence does not exist.

■ Enabling and Inhibiting Factors

Again, the relative newness of acceptable measures of the hot intelligences means that little is known about factors that inhibit or facilitate these intelligences. For example, one might believe that being in a powerful emotional state—say, depression—might interfere with measured emotional intelligence, yet the evidence does not seem to bear that out (Caruso et al., 2002). The lack of relation between feeling positive and being emotionally intelligent is interesting. Perhaps there is a certain realism about events that occurs with sadness (e.g., Alloy & Abramson, 1979), or perhaps, often, the skills offered by those high in emotional intelligence are simply undervalued in society. Some of those high in emotional intelligence may voluntarily choose emotionally difficult and even depressing occupations that they perceive someone must do (e.g., Mayer, 2001).

■ Gender, Cross-National, and Cross-Cultural Aspects

There is now a well-documented performance advantage of women over men on scales of emotional intelligence. Women score between one quarter and one half a standard deviation above men, on average, which represents a moderate-sized group difference (Mayer & Geher, 1996; Mayer et al., 1999, 2002).

Measures of social and personal intelligence have not yet been subjected to cross-cultural or cross-national studies. Measures of emotional intelligence have been employed cross-nationally and cross-culturally, but no study examining such issues has been published.

Deliberate Interventions

Recall that intelligence is a combination of mental ability and the accumulated knowledge that arises from that ability. Although it appears relatively difficult to raise intelligence per se (because the ability portion is fairly recalcitrant to intervention), it is quite easy to raise a person's accumulated knowledge in areas of social interaction (for social intelligence), self-understanding (for personal intelligence), and emotion (for emotional intelligence).

Educators have long proposed that curricula in these areas are of potential benefit to students. The 1920s saw the advent of character education programs such as the Boy Scouts and Girl Scouts, which attempted to address social behavior in a moral fashion. The 1970s saw the advent of affective education programs meant to address many of the same issues in a more psychologically minded fashion. Today, there has been considerable interest in a combination of these ideas under the umbrella of Social and Emotional Learning (SEL; see http://www.casel.org; Mayer & Cobb, 2000).

A learning curriculum based solely on emotional intelligence versus one based on SEL can be expected to both overlap and diverge. The emotional ability approach would focus most specifically on teaching emotional perception, using emotions to enhance thought, emotional reasoning, and emotional management. Most contemporary social and emotional learning curricula, on the other hand, mix together emotional skills, social values and social understanding, as well as learning specific behavioral skills. Empirical research will be necessary to sort out the relative advantages of these two approaches. On its face, the social and emotional learning curriculum might seem more desirable because of its breadth. One drawback might be that an overemphasis on students getting along with one another could stifle creativity, healthy skepticism, or spontaneity. Moreover, too strong an emphasis on positive psychology might disenfranchise depressed or oppositional students. Such concerns argue for a more focused education of emotions or, alternatively, a balance between social learning and more personally oriented learning (Cobb & Mayer, 2000).

Both the Fetzer Institute and the Collaborative for Academic, Social, and Emotional Learning (CASEL) have promoted the need for such curricula, along with calls for outcome studies of such work. Most recently, a number of outcome studies are under way, and answers concerning the efficacy of such programs will be known soon. A meta-analytic study of 177 outcome studies of curricula designed to improve social behavior and problem solving found promising results (Durlak & Wells, 1997). In general, programs designed to improve school environment, to directly address individuals' mental health, or to assist students in making life transitions, all had positive effects in student outcome relative to control groups. Although this speaks to personal knowledge in a general way, rather than more specifically to hot intelligences, it is important information germane to the importance of knowledge of the self and others.

What Is Not Known?

More is unknown than known about the hot intelligences. At a level of basic measurement, although ability measures of emotional intelligence are now fairly well developed, better measures of personal and social intelligence are still needed. Once all such measures are developed, understanding their intercorrelations will, no doubt, become a major enterprise.

At a more basic level, there is considerable interest in the neuroscience of emotional intelligence (Bechara, Tranel, & Damasio, 2000) and in the cognitive processes related to it (Mayer, 2000). Research in these areas can help us understand which areas of the brain are involved, individual differences in neurological activity, and cognitive processes that make up the components of emotional intelligence.

As measurement issues are addressed, attention needs to focus on what these measures predict. There is tantalizing evidence that emotional intelligence predicts reduced problem behavior (Brackett & Mayer, 2003; Brackett et al., in press; Cobb & Mayer, 2000; Trinidad & Johnson, 2002). If that result continues to replicate, the relation between emotional intelligence and problem behavior would demand further attention. Beyond problem behavior, the hot intelligences might have other important predictive areas not yet imagined.

Finally, research on teaching emotional, personal, and social knowledge has just begun. Research is needed to determine what sorts of training programs are best in these regards, and whether they can reduce problem behaviors and enhance interpersonal relationships.

Must-Read Articles and Books

Brody, N. (2000). History of theories and measurements of intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 16–33). Cambridge, England: Cambridge University Press.

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Mayer, J. D., Salovey, P., & Caruso, D. R. (2000). Models of emotional intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 396–420). Cambridge, England: Cambridge University Press.

Plucker, J. A., Callahan, C. M., & Tomchin, E. M. (1996). Wherefore art thou, multiple intelligences? Alternative assessments for identifying talent in ethnically diverse and economically disadvantaged students. *Gifted Child Quarterly, 40*, 81–92.

Saarni, C. (2001). Emotional competence: A developmental perspective. In R. Bar-On & J. D. A. Parker (Eds.), *The handbook of emotional intelligence* (pp. 68–91). San Francisco: Jossey-Bass.

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