



Development and validation of a measure of emotional intelligence

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Abstract

This series of studies describes the development of a measure of emotional intelligence based on the model of emotional intelligence developed by Salovey and Mayer [Salovey, P. & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9, 185–211.]. A pool of 62 items represented the different dimensions of the model. A factor analysis of the responses of 346 participants suggested the creation of a 33-item scale. Additional studies showed the 33-item measure to have good internal consistency and test–retest reliability. Validation studies showed that scores on the 33-item measure (a) correlated with eight of nine theoretically related constructs, including alexithymia, attention to feelings, clarity of feelings, mood repair, optimism and impulse control; (b) predicted first-year college grades; (c) were significantly higher for therapists than for therapy clients or for prisoners; (d) were significantly higher for females than males, consistent with prior findings in studies of emotional skills; (e) were not related to cognitive ability and (f) were associated with the openness to experience trait of the big five personality dimensions. © 1998 Elsevier Science Ltd. All rights reserved.

1. Introduction

For many years the study of intelligence focused mainly on the adaptive use of cognition (e.g. Wechsler, 1939; Piaget, 1972). In recent years theorists such as Gardner (1983) and Sternberg (1988) have suggested more encompassing approaches to understanding intelligence. The publication of the book by Goleman (1995), “Emotional Intelligence”, made popular the notion of viewing the experience and expression of emotions as a domain of intelligence.

Currently several comprehensive models of emotional intelligence provide alternative theoretical

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frameworks for conceptualizing the construct. These models do not contradict one another, but they do take somewhat different perspectives on the nature of emotional intelligence. Even though Gardner (1983) did not use the term emotional intelligence, his concepts of intrapersonal and interpersonal intelligences provided a foundation for later models of emotional intelligence. The core of intrapersonal intelligence is the ability to know one's own emotions, while the core of interpersonal intelligence is the ability to understand other individuals' emotions and intentions.

Salovey and Mayer (1990), who first used the term "emotional intelligence", postulated that emotional intelligence consists of the following three categories of adaptive abilities: appraisal and expression of emotion, regulation of emotion and utilization of emotions in solving problems. The first category consists of the components of appraisal and expression of emotion in the self and appraisal of emotion in others. The component of appraisal and expression of emotion in the self is further divided into the subcomponents of verbal and non-verbal and as applied to others is broken into the subcomponents of non-verbal perception and empathy. The second category of emotional intelligence, regulation, has the components of regulation of emotions in the self and regulation of emotions in others. The third category, utilization of emotion, includes the components of flexible planning, creative thinking, redirected attention and motivation. Even though emotions are at the core of this model, it also encompasses social and cognitive functions related to the expression, regulation and utilization of emotions.

This influential book of Goleman (1995), "Emotional Intelligence", presented many important correlates of emotional intelligence and somewhat expanded the construct to include a number of specific social and communication skills influenced by the understanding and expression of emotions. The popular book of Cooper and Sawaf (1997), "Executive EQ", outlined a model of emotional intelligence that relates specific skills and tendencies to the following four cornerstones: emotional literacy, which includes knowledge of one's own emotions and how they function; emotional fitness, which includes emotional hardiness and flexibility; emotional depth, which involves emotional intensity and potential for growth and "emotional alchemy", which includes the ability to use emotion to spark creativity.

Mayer and Salovey (1997) formulated a revised model of emotional intelligence which gives more emphasis to the cognitive components of emotional intelligence and conceptualizes emotional intelligence in terms of potential for intellectual and emotional growth. The revised model consists of the following four branches of emotional intelligence: perception, appraisal and expression of emotion; emotional facilitation of thinking; understanding, analyzing and employing emotional knowledge and reflective regulation of emotions to further emotional and intellectual growth. The perception, appraisal and expression of emotion are viewed as the most basic processes, while the reflective regulation of emotions requires the most complex processing. Further, each branch has associated with it stages or levels of abilities, which individuals master in sequential order.

The assessment of the construct of emotional intelligence has not kept pace with interest in the construct. There exist two scales described in conference papers, the Bar-On Emotional Quotient Inventory (Bar-On, 1996a,b) and the Style in the Perception of Affect Scale (Bernet, 1996), which attempt to measure the construct of emotional intelligence and have some validity evidence.

The Bar-On Emotional Quotient Inventory is a 133-item self-report measure which consists of 15 distinct scales that were developed based on Bar-On's professional experience and his review of the literature. The scales include ones measuring: emotional self-awareness, assertiveness, self-regard, self-actualization, independence, empathy, interpersonal relationships, social responsi-

bility, problem solving, reality testing, flexibility, stress tolerance, impulse control, happiness and optimism. Bar-On (1996a) reported that the scales showed evidence of validity in that they correlate with several measures which are theoretically related and differentiated between groups such as individuals who rated themselves as high on personal success and those who rated themselves low and prisoners and non-prisoners.

Bernet (1996) developed the 93-item Style in the Perception of Affect scale based on the premise that being able to attend rapidly, appropriately and effortlessly to feelings is the cornerstone of emotional intelligence. The measure assesses respondents' preferences for the following three styles: body-based, evaluation-based and logic-based perception of affect. Bernet found that body based perception of affect was associated with better mental health, awareness of small bodily changes, social skill, contentment and creativity.

The book "Executive EQ" (Cooper and Sawaf, 1997) presented the EQ MAP test which consists of over 250 items which divide into 21 subscales which are based on Cooper and Sawaf's model of emotional intelligence. However, the book presented no information regarding the measure's reliability or validity. Finally, Mayer and Salovey (1997) are currently working on a performance-oriented, CD-based measure of emotional intelligence.

Additionally, there are validated instruments that assess what may be components of emotional intelligence. For example, the Toronto Alexithymia Scale (Taylor et al., 1985) measures difficulties in identifying and describing feelings and the Trait Meta Mood Scale (Salovey et al., 1995) measures attention to feelings, clarity of feelings and mood repair.

There is still a need for brief, validated measures of emotional intelligence that are based on a cohesive and comprehensive model of emotional intelligence. The purpose of the present series of studies was to develop such a measure.

We set out to base our measure of emotional intelligence on a theoretically cohesive and comprehensive model. We believe that the original model of Salovey and Mayer (1990) and the Mayer and Salovey (1997) revised model are the most cohesive and comprehensive models of emotional intelligence. This revised model seems to be an excellent process-oriented model that emphasizes stages of development in emotional intelligence, potential for growth and the contributions emotions make to intellectual growth. However, the original model of Salovey and Mayer (1990) lends itself better to conceptualizing the various dimensions of an individual's current state of emotional development. Additionally, most dimensions of other models can be integrated into this model. Thus, we used the original model of emotional intelligence of Salovey and Mayer (1990) as a basis for the development of a self-report measure of emotional intelligence in hopes that this encompassing model of emotional intelligence would provide a solid foundation for a measure of individuals' current level of emotional intelligence.

2. Generation of initial pool of items

We generated a pool of 62 items based on the theoretical model of emotional intelligence developed by Salovey and Mayer (1990). Each item selected for the initial pool of 62 items reflected an adaptive tendency toward emotional intelligence within the framework of the model. Respondents used a 5-point scale, on which a "1" represented "strongly disagree" and a "5" represented "strongly agree," to indicate to what extent each item described them. All parts of the

model were represented by multiple items. Each of the first four authors independently evaluated each item for (a) fidelity to the relevant construct, (b) clarity and (c) readability. We deleted some items, added some items, revised a number of items and then pilot tested the items by asking several individuals to complete the scale and note any unclear elements. This process resulted in a pilot-tested pool of 62 items.

3. Study 1: development, internal consistency and validity

3.1. Overview

We asked a large number of individuals to respond to the initial items so that we could analyze the factor structure of the items and select the final items for the scale. Subsets of respondents also completed theoretically related measures so we could determine the association between these measures and scores on our final scale. These theoretically related constructs included alexithymia, non-verbal communication of affect, optimism, pessimism, attention to feelings, clarity of feelings, mood repair, depressed mood and impulsivity. Finally, we hypothesized that on a valid measure of emotional intelligence there would be certain between-group differences. We expected that psychotherapists would score higher than prisoners and higher than psychotherapy clients. We also expected that women would score higher than men based on prior findings (e.g. Goleman, 1995; Gross and John, 1995; Bjorklund and Kipp, 1996; Skuse et al., 1997) that suggest that women are more adept at emotional expression and relating to others, which are skills theorized to be components of emotional intelligence (Salovey and Mayer, 1990).

3.2. Methods

3.2.1. Participants

A total of 346 participants were recruited from a variety of settings in a metropolitan area in the southeastern United States. Participants included university students and individuals from diverse community settings. Of those who reported their gender, 218 were women and 111 were men. The average age of participants was 29.27, S.D. = 10.23.

3.2.2. Procedure

The 346 participants rated themselves on each of the 62 items using the five-point response scale. In addition a number of participants also filled out one of several established scales assessing constructs theoretically related to emotional intelligence.

Twenty-five of the 346 participants completed the Toronto Alexithymia Scale (Taylor et al., 1985) which assesses difficulties in identifying and describing feelings. The Affective Communications Test (Freedman et al., 1980), which assesses individuals' non-verbal expressiveness, was completed by 36 participants. The Life Orientation Test (Scheier and Carver, 1985; Marshall et al., 1992), which assesses optimism and pessimism, was completed by 27 participants. The Trait Meta Mood Scale (Salovey et al., 1995), which assesses attention to feelings, clarity of feelings and mood repair, was completed by 49 participants. The Zung Self-Rating Scale (Zung, 1965), which measures depressed

mood, was completed by 38 participants and the Barratt Impulsivity Scale (Patton et al., 1995) was completed by 56 participants.

4. Results

4.1. Creation of the 33-item scale

A principal-components, orthogonal-rotation, factor analysis of the responses of the 346 participants to the 62 items resulted in a scree plot of eigenvalues that showed four factors which had items loading at 0.40 and above. The first factor had an eigenvalue of 10.79 and 33 of the items loaded at 0.40 or above on this first factor. The second through fourth factors in the solution had eigenvalues of 3.58, 2.90 and 2.53, respectively. Very few items that did not have higher loadings on the first factor loaded on factors two through four; factor two had four additional items loading on it, factor three had three additional items and factor four had one additional item. The items loading on factors two through four were not recognizable as conceptually distinct from the items loading on factor one.

The 33 items loading on factor one represented all portions of the conceptual model of Salovey and Mayer (1990). In this set of 33 items, representation of different categories of the model was roughly proportionate to the model; 13 of the items came from among those generated for the appraisal and expression of emotion category of the model, 10 of the items came from among those generated for the regulation of emotion category of the model and 10 came from among those items generated for the utilization of emotion category of the model. Further, items reflected each of the components and subcomponents of each category, e.g. regulation of emotion in the self, regulation of emotion in others.

The strength of factor one and the conceptual parsimony of the 33 items that loaded on the first factor led us to select these 33 items for the final scale. Table 1 shows the items comprising the scale.

An internal consistency analysis showed a Cronbach's alpha of 0.90 for the 33-item scale. The Flesch–Kincaid reading grade level formula provided information regarding the reading ability needed to complete the scale. The analysis indicated that the 33-item scale requires a reading level typical of fifth graders, Flesch–Kincaid = grade level 5.68.

4.2. Validation of the scale

4.2.1. Correlation with theoretically related constructs

One would expect a valid measure of emotional intelligence to be related to measures that assess specific aspects of awareness and expression of emotion, outlook on life, depressed mood, ability to regulate emotions and impulsivity. As expected, higher scores on the 33-item emotional intelligence scale were associated with less alexithymia as measured by the Toronto Alexithymia Scale [$r(24) = -0.65, p < 0.0001$], greater attention to feelings as measured by the Attention subscale of the Trait Meta Mood Scale [$r(48) = 0.63, p < 0.0001$], greater clarity of feeling as measured by the Clarity subscale of the Trait Meta Mood Scale [$r(47) = 0.52, p < 0.0001$], more mood repair as measured by the Mood Repair subscale of the Trait Meta Mood Scale [$r(47) = 0.68, p < 0.0001$],

Table 1

The 33-item emotional intelligence scale

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- (1) I know when to speak about my personal problems to others
 - (2) When I am faced with obstacles, I remember times I faced similar obstacles and overcame them
 - (3) I expect that I will do well on most things I try
 - (4) Other people find it easy to confide in me
 - (5) I find it hard to understand the non-verbal messages of other people*
 - (6) Some of the major events of my life have led me to re-evaluate what is important and not important
 - (7) When my mood changes, I see new possibilities
 - (8) Emotions are one of the things that make my life worth living
 - (9) I am aware of my emotions as I experience them
 - (10) I expect good things to happen
 - (11) I like to share my emotions with others
 - (12) When I experience a positive emotion, I know how to make it last
 - (13) I arrange events others enjoy
 - (14) I seek out activities that make me happy
 - (15) I am aware of the non-verbal messages I send to others
 - (16) I present myself in a way that makes a good impression on others
 - (17) When I am in a positive mood, solving problems is easy for me
 - (18) By looking at their facial expressions, I recognize the emotions people are experiencing
 - (19) I know why my emotions change
 - (20) When I am in a positive mood, I am able to come up with new ideas
 - (21) I have control over my emotions
 - (22) I easily recognize my emotions as I experience them
 - (23) I motivate myself by imagining a good outcome to tasks I take on
 - (24) I compliment others when they have done something well
 - (25) I am aware of the non-verbal messages other people send
 - (26) When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself
 - (27) When I feel a change in emotions, I tend to come up with new ideas
 - (28) When I am faced with a challenge, I give up because I believe I will fail*
 - (29) I know what other people are feeling just by looking at them
 - (30) I help other people feel better when they are down
 - (31) I use good moods to help myself keep trying in the face of obstacles
 - (32) I can tell how people are feeling by listening to the tone of their voice
 - (33) It is difficult for me to understand why people feel the way they do*
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Note: The authors permit free use of the scale for research and clinical purposes.

*These items are reverse scored.

greater optimism as measured by the optimism scale of the Life Orientation Test [$r(26)=0.52$, $p<0.006$], less pessimism as measured by the pessimism scale of the Life Orientation Test [$r(26)=-0.43$, $p<0.025$], less depression as measured by the Zung Depression Scale [$r(37)=-0.37$, $p<0.021$] and less impulsivity as measured by the Barratt Impulsiveness Scale [$r(55)=-0.39$, $p<0.003$]. Nonverbal expressiveness of emotion as assessed by the Affective Communication Test was not significantly related to scores on the emotional intelligence scale, $r(34)=0.17$.

4.2.2. Between-group differences

One would expect certain between-group differences on a valid measure of emotional intelligence. We expected that a group of psychotherapists who were part of our sample would score higher on the measure than a group of female prisoners and higher than a group of individuals in a substance abuse treatment program. Additionally, we expected that the women in our overall sample would score higher than the men.

Therapists scored significantly higher ($M = 134.92$, $S.D. = 20.25$) than the prisoners ($M = 120.08$, $S.D. = 17.71$), $t(37) = 2.35$, $p < 0.012$ and than clients in a substance abuse treatment program ($M = 122.23$, $S.D. = 14.08$), $t(25) = 1.86$, $p < 0.035$. Further, the women in the sample scored significantly higher ($M = 130.94$, $S.D. = 15.09$) than the men ($M = 124.78$, $S.D. = 16.52$), $t(327) = 3.39$, $p < 0.001$.

5. Study 2: internal consistency replication

In order to confirm the prior findings of internal consistency, we asked 27 female and five male college students from the southeastern United States, with an average age of 30.11, $S.D. = 8.45$, to respond to the 33-item measure. The cross-check of internal consistency showed a Cronbach's alpha of 0.87 for the 32 participants.

6. Study 3: test–retest reliability

In order to evaluate the test–retest reliability of the measure, we asked 22 female and six male college students from the southeastern United States, with an average age of 32.00, $S.D. = 10.13$, to complete the scale. They completed the measure twice, with a two-week interval between measurements. Two-week test–retest reliability was 0.78.

7. Study 4: predictive validity

7.1. Overview

According to Goleman (1995), cognitive intelligence may provide individuals with entry to a setting, but emotional intelligence plays an important role in determining how successful they are after they enter the setting. To examine whether our scale could predict success in a setting, we conducted a longitudinal study to test whether scores on the emotional intelligence measure would predict college students' success in their first year.

7.2. Method and results

Thirty-three female and 31 male first-year college students, with an average age of 18.89, $S.D. = 2.10$, participated. The students completed the 33-item emotional intelligence measure during their first month at a university in the southeastern United States. At the end of the academic year we obtained the students' official cumulative grade point averages.

Scores on the 33-item self-report measure of emotional intelligence, completed at the start of the academic year, significantly predicted grade point average at the end of the year, $r(63) = 0.32$, $p < 0.01$.

8. Study 5: discriminant validity

8.1. Overview

Salovey and Mayer (1990) took the view that emotional intelligence may or may not be related to other types of intelligences, such as cognitive ability and recently made the more specific prediction that emotional intelligence is related to, but at the same time distinct from, other types of intelligences (Mayer and Salovey, 1997).

Thus, we predicted that the 33-item measure of emotional intelligence would not be so highly related to cognitive ability as to be redundant. We tested this prediction by relating scores on the measure of emotional intelligence to scores on the SAT combined math and verbal sections, (College Entrance Examination Board and Educational Testing Service, 1995), which are widely used measures of cognitive ability related to college aptitude.

8.2. Method and results

For 42 of the first-year college students described in study 4, pre-admission SAT or ACT scores were available. Thirty-nine of these students had SAT scores earned after the 1995 renorming of the SAT, while three students had ACT scores. To create a uniform score for cognitive ability, the scores of the students who had ACT scores were converted to equivalent SAT scores by using the percentile score method recommended by the College Entrance Examination Board and Educational Testing Service (1995).

The mean SAT score was 978, S.D. = 145. Scores on the 33-item measure of emotional intelligence were not related to SAT scores, $r(41) = -0.06$.

9. Study 6: discriminant validity

9.1. Overview

Emotional intelligence is generally conceptualized as a somewhat enduring, trait-like characteristic (e.g. Salovey and Mayer, 1990; Goleman, 1995; Mayer and Salovey, 1997). Most such trait-like characteristics are related to one of the big five personality dimensions (e.g. Digman, 1990; Ackerman and Heggstad, 1997), which are as follows: neuroticism, extraversion, agreeableness, conscientiousness and openness to experience (this last dimension is sometimes labeled intellect). Most psychological constructs and the measures that assess them relate to one or several of these dimensions. However, to be useful, scores on a new measure should not correlate so highly with a dimension of the big five as to be redundant.

To assess the place of emotional intelligence as measured by the 33-item self-report measure

within the big-five framework and to provide information about the measure's discriminant validity, scores on the 33-item measure were related to the big five personality dimensions.

9.2. Method and results

Twenty-three college students from the southeastern United States participated. Their average age was 28.65, S.D. = 6.91 and of the 17 who reported their gender 16 were women. Participants completed both the 33-item measure of emotional intelligence and the revised NEO Personality Inventory (Costa and McCrae, 1992a; Costa and McCrae, 1992b; Costa and McCrae, 1992c). Higher scores on the measure of emotional intelligence were significantly associated with greater openness to experience, $r(22) = 0.54$, $p < 0.009$ and not significantly related to any of the other big five dimensions. The magnitude of these nonsignificant correlations between the emotional intelligence measure and the other four dimensions was as follows: neuroticism, -0.28 ; extraversion, 0.28 ; agreeableness, 0.26 and conscientiousness, 0.21 .

10. Conclusion

The research described in this paper addressed the development and validation of a self-report measure of emotional intelligence. The model of emotional intelligence of Salovey and Mayer (1990) provided the conceptual foundation for the items used in the scale. A factor analysis of a larger pool of items suggested a one-factor solution of 33 items. This one-factor solution resulted in scale items that represented each of the following categories: appraisal and expression of emotion in the self and others, regulation of emotion in the self and others and utilization of emotions in solving problems.

Because the original pool of items used in this study represented all categories and components of the theoretical model of emotional intelligence of Salovey and Mayer (1990) and because the first factor derived from a factor analysis included a roughly equal number of items from the different categories and components of the model, one can view the results of the factor analysis as suggesting a homogeneous construct of emotional intelligence. However, for two reasons caution should be used in drawing this conclusion. First, there are alternative operationalizations of emotional intelligence to the ones provided by the Salovey and Mayer (1990) model. Second, the model was represented by a limited set of self-report items. Alternative items or an assessment technique other than self-report might show more specific factors.

The 33-item scale developed through factor analysis showed good internal reliability with two different samples. Two-week test-retest reliability indicated that the scores were fairly stable over time.

The scale showed evidence of validity. Scores on the scale were related to eight of nine measures predicted to be related to the emotional intelligence. These other measures assessed theoretically related constructs, including awareness of emotion, outlook on life, depressed mood, ability to regulate emotions and impulsivity. Scores on the emotional intelligence scale differed between groups one would expect to differ on level of emotional intelligence. Psychotherapists scored higher than prisoners and substance abuse clients. Also, women scored higher than men. The measure

showed evidence of predictive validity in that incoming college students' emotional intelligence scores predicted their end-of-year grade point average.

The scale also showed evidence of discriminant validity. It proved to be different from cognitive ability, as measured by the SAT. The measure also was not significantly related to four of the big five personality dimensions. It was significantly correlated with openness to experience, but not so highly as to be redundant. One might expect an association between these two constructs on the basis of the description of a typical high scorer on the openness subscale as someone for whom "emotional reactions are varied and important" (Costa and McCrae, 1992c, p. 28).

In sum, the findings indicate that the 33-item scale holds promise as a reliable, valid measure of emotional intelligence as conceptualized by Salovey and Mayer (1990). Potential uses of the scale in theoretical research involve exploring the nature of emotional intelligence, including the determinants of emotional intelligence, the effects of emotional intelligence and whether emotional intelligence can be enhanced.

The emotional intelligence scale, like most self-report measures, seems susceptible to faking good. Thus, the emotional intelligence scale should probably not be used as a method for selecting individuals for jobs or other highly desired opportunities.

However, the scale may have value in assessing individuals who want a valid appraisal of their emotional intelligence. These individuals may want an assessment because they (a) wish to understand one of their own important characteristics so that they can better set goals and work toward these goals; (b) experience problems in areas related to emotional intelligence, such as difficulties in impulse control or (c) are considering entering settings or careers in which emotional intelligence is important.

For example, the scale might be used to help individuals who are at risk for performing poorly at tasks that require emotional intelligence, as in establishing themselves in a new setting such as a college. The finding that emotional intelligence scale scores predicted first-year college grades suggests the ability of the scale to help identify these individuals. Once identified, these at-risk individuals might benefit from special guidance, training or support.

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References

- Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality and interests: Evidence for overlapping traits. *Psychological Bulletin*, *121*, 219–245.
- Bar-On, R. (1996a). *The Emotional Quotient Inventory (EQ-i): A test of emotional intelligence*. Toronto: Multi-Health Systems.
- Bar-On, R. (1996b). *The era of the "EQ": Defining and assessing emotional intelligence*. Toronto: Annual Convention of the American Psychological Association.
- Bernet, M. (1996). *Emotional intelligence: components and correlates*. Toronto: Annual Convention of the American Psychological Association.
- Bjorklund, D. F., & Kipp, K. (1996). Parental investment theory and gender differences in the evolution of inhibition mechanisms. *Psychological Bulletin*, *120*, 163–188.

- College Entrance Examination Board and Educational Testing Service (1995). *Admission officer's handbook for the SAT program: April 1995 through June 1996*. Princeton, NJ: College Board SAT Program.
- Cooper, R. K., & Sawaf, A. (1997). *Executive EQ: Emotional intelligence in leadership and organizations*. New York: Grosset/Putnam.
- Costa, P. T., & McCrae, R. R. (1992a). Normal personality assessment in clinical practice: The NEO Personality Inventory. *Psychological Assessment*, 4, 5–13.
- Costa, P. T., & McCrae, R. R. (1992b). *Revised Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI): professional manual*. Odessa, FL: Psychological Assessment Resources.
- Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology*, 41, 417–440.
- Freedman, H. S., Prince, L. M., Riggio, R. E., & DiMatteo, M. R. (1980). Understanding and assessing nonverbal expressiveness: The Affective Communication Test. *Journal of Personality and Social Psychology*, 39, 333–351.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Goleman, D. (1995). *Emotional intelligence*. New York: Bantam Books.
- Gross, J. J., & John, O. P. (1995). Facets of emotional expressivity: Three self-report factors and their correlates. *Personality and Individual Differences*, 19, 555–568.
- Marshall, G. N., Wortman, C. B., Kusulas, J. W., Hervig, L. K., & Vickers, R. R. (1992). Distinguishing optimism from pessimism: Relations to fundamental dimensions of mood and personality. *Journal of Personality and Social Psychology*, 62, 1067–1074.
- Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications*. New York: Basic Books.
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology*, 51, 768–774.
- Piaget, J. (1972). *The psychology of intelligence*. Totowa, NJ: Littlefield Adams.
- Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9, 185–211.
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure and health* (pp. 125–154). Washington, D.C.: American Psychological Association.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4, 219–247.
- Skuse, D. H., James, R. S., Bishop, D. V., Coppin, B., Dalton, P., Aamodt-Leeper, G., Bacarese-Hamilton, M., Creswell, C., McGurk, R., & Jacobs, P. A. (1997). Evidence from Turner's syndrome of an imprinted x-linked locus affecting cognitive function. *Nature*, 387, 705–708.
- Sternberg, R. J. (1988). *The triarchic mind: A new theory of human intelligence*. New York: Viking.
- Taylor, G. J., Ryan, D., & Bagby, R. M. (1985). Toward the development of a new self-report alexithymia scale. *Psychotherapy and Psychosomatics*, 44, 195–199.
- Wechsler, D. (1939). *The measurement of adult intelligence*. Baltimore, MD: William and Wilkins.
- Zung, W. K. (1965). A self-rating depression scale. *Archives of General Psychiatry*, 12, 63–70.