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COMMENTARIES

Emotional Intelligence: Muddling Through Theory and Measurement

RICHARD D. ROBERTS
Educational Testing Service and Columbia University

GERALD MATTHEWS
University of Cincinnati

MOSHE ZEIDNER
University of Haifa

Notwithstanding the overall critical tenor of the commentary that follows, we are in general agreement with several key themes presented by Cherniss (2010) in his focal article. First, we fully concur that resolving uncertainties over definitions, models, and measures is critical for scientific progress in this fledgling field (Matthews, Zeidner, & Roberts, 2002). Second, we are encouraged by the author's re-echoing of our sentiment to find some middle ground between starry-eyed enthusiasm for emotional intelligence (EI) and outright dismissal of the construct (Zeidner, Matthews, & Roberts, 2009). Finally, as we have also previously underscored, we agree that a scientific account of EI rests on three major pillars: theory, measurement, and applications (Zeidner et al., 2009). Given space constraints, and the likelihood that a critical mass of commentators will address application, our response focuses upon problems we believe are evident in Cherniss' account of the first two pillars of science—theory and measurement.

Theory

Regarding theory, we take issue with the author on a number of points. First, EI models should be more theory driven than the target article allows. Indeed, many EI models are very light on theory, being little more than laundry lists of desirable personal qualities that exclude cognitive intelligence, ranging from empathy and optimism to assertiveness to reality testing. Previously, we have pointed out that such qualities may be supported by quite distinct sets of constructs and processes including temperament (e.g., trait EI), information processing (as measured by objective indices such as reaction time), emotion regulation, and explicit and implicit knowledge of emotions (e.g., Roberts, Zeidner, & Matthews, 2007). In different contexts, for example,

Correspondence concerning this article should be addressed to Richard D. Roberts.
E-mail: RRoberts@ets.org
Address: Center for New Constructs, R&D, MS 16-R, Educational Testing Service, Rosedale Road, Princeton, NJ 08541
Richard D. Roberts, Center for New Constructs, R&D, Educational Testing Service, Gerald Matthews, Department of Psychology, University of Cincinnati; Moshe Zeidner, Laboratory for Research in Personality and Emotions and Center for Interdisciplinary Research of Emotions, University of Haifa.

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"emotional perception" might be driven by innate neural circuits responsive to biologically significant stimuli, by a strategic search for the positive or negative elements of a situation, or by acquired skills for evaluating a specific context. Definitions of EI typically lack clarity about the key processes supporting the construct. We might have very different conceptions of emotional perception ability as being either an innate sensitivity to intrinsically emotive stimuli or as accumulated wisdom over how people express emotion within the social constraints of the workplace. Models of EI should go beyond list making to specify the neurological and cognitive processes that support EI, much as the emerging cognitive neuropsychology of frontal areas supports theories of intelligence.

The Mayer–Salovey–Caruso (MSC) account of the four branches of EI as the preferred definition espoused in the article is too arbitrary to serve as a universal definition. The core issue is that there is no independent criterion for deciding what qualities do and do not belong to EI, beyond the researcher's judgment. One could plausibly argue that synesthesia (assessed by the Mayer–Salovey–Caruso Emotional Intelligence Test [MSCEIT] "Sensations" subtest) is not a true ability, or that empathy (not part of the definition) is. There is no a priori way to resolve such disputes. Indeed, the partial convergence between different accounts of EI noted by Cherniss likely results from researchers taking Mayer and Salovey's (1993) seminal work as the starting point for their own, so there is an element of historical accident to convergence. Traditionally, the theory of individual differences has advanced in tandem with psychometric models. During research on cognitive intelligence, the early debates over definitions accomplished very little. It was only through the development of replicable factor models, spanning the full range of ability tests, that meaningful progress was achieved (Carroll, 1993). The MSCEIT has various psychometric strengths, including a robust general factor (Mayer et al., 2003), but development of a comprehensive factor model akin to Carroll's (1993) intelligence model requires much wider sampling of "primary" abilities for emotion, including, critically, objective performance measures rather than the verbal responses of the MSCEIT.

There are comparable difficulties with the attempt to present emotional and social competence (ESC) as an additional construct. We agree with Cherniss on the importance of contextualized, learned competencies in the workplace, but a definition of ESC sufficiently rigorous to support valid measurement may be difficult to achieve. A key issue is to discriminate competence from skills specific to particular tasks. Scherer (2007) usefully suggests that competencies occupy a middle ground between basic aptitudes and skills, representing general procedural knowledge within a particular domain. For example, a range of specific social–emotional skills might support a general facility for forming good working relationships with others. The difficulty is to determine the breadth of the domain in which the competence is expressed—social relationships generally, work relationships only, or specific types of work relationships (e.g., cooperating with a difficult coworker)? Cherniss tends to identify ESC with the constructs measured by self-report questionnaires (although he also acknowledges the limitations of such questionnaires). He claims, for example, that "One of the most popular measures of ESC is Bar-On's emotional quotient inventory (EQ-i)." This approach tends to identify ESC with broad personal dispositions rather than with domain-centered knowledge, which may limit the relevance of the construct to the occupational domain.

Neglect of context also makes it more difficult to discriminate EI and ESC operationally. Cherniss states that "it seems clear that the abilities found in the Mayer–Salovey–Caruso model represent EI, whereas the other three models consist primarily of emotional and social competencies." (The distinction seemingly corresponds to that between fluid and crystallized cognitive abilities.) However, it is

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far from clear that the MSCEIT is a pure measure of basic abilities or that questionnaire assessments only tap learned competencies. The attribution of emotion to graphic images (the MSCEIT "Pictures" subtest for emotional perception) might easily be seen as a learned competence, as taught in art appreciation classes. Similarly, strategies for regulating emotion in self and others (MSCEIT emotional management tests) are likely to be shaped by culture-dependent social learning. Conversely, the trait emotional intelligence questionnaire (TEIQue) developed by Petrides and colleagues includes a scale for emotional perception. It is unclear why MSCEIT emotional perception should be classed as an ability but TEIQue emotional perception as an ESC; EI and ESC should be discriminated conceptually independently of the means of measurement.

Even if we allow that questionnaires may provide valid measurement of competencies (a point on which we are skeptical), it is unclear if all the constructs included in the Bar-On EQ-i model, for example, are necessarily learned rather than basic. Qualities such as independence, impulse control, and happiness (all EQ-i scales) emerge in infancy and appear to represent basic temperamental qualities (Rothbart, Sheese, & Conradt, 2009) and, in adulthood, presumably reflect some complex mixture of innate and learned characteristics. Cherniss acknowledges the issue of overlap with personality traits, but the problem is more severe than he indicates. Personality traits are seen as instances of *typical* rather than *maximal* performance, but competencies should be expressed as the latter. Furthermore, the traits that overlap most strongly with questionnaire assessments are associated with both performance benefits and deficits, depending on the task. Emotionally stable individuals may lack awareness of threat, extraverts are prone to impulsive responding, and highly agreeable individuals may crumble in highly competitive settings (see Matthews et al., 2002, for a review of evidence).

In short, we agree with the general objectives set by Cherniss of defining EI with clarity and of separating basic ability from learned competencies. However, we are skeptical about the specific approaches advocated in his article. Establishing EI as a broad-based human quality akin to "IQ" will require a more extensive program of psychometric studies underpinned primarily by objective measures of information-processing and social–emotional performance skills. Differentiating ESC from EI will require a clearer conceptual discrimination of ESC from personality and temperament, and a stronger focus on the domains and contexts within which competencies may be defined. We invite Cherniss to provide explicit criteria for discriminating emotional abilities from competencies that may be applied to the range of personal qualities under discussion without reference to extant tests and measures.

Measurement

We also disagree with the article's take on measurement. In particular, the following three problems appear as challenges for measures of ESC:

1. *ESC measures share near complete empirical overlap with personality.* Contrary to what is implicated in the lead article, the extent that ESC measures correlate with personality is very high. For example, De Raad (2005) showed that 66% of items drawn from self-report inventories of ESC could be classified under the Big Five framework (items not classifiable were often ambiguous or difficult for respondents to interpret). In numerous other studies, correlations between the Big Five and ESC measures has been found to be around .50 to .70 for at least one of the five superfactors, with multiple correlations approaching .80 and near unity if corrected for attenuation (Roberts, Schulze, & MacCann, 2008). Where findings are suggestive that ESC measures have variance left

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over beyond personality, it is not clear if facets of the Big Five were adequately represented.

2. *ESC measures share weak or unexpected correlations with emotions measures.* One issue not mentioned in the focal article is attempts to link ESC measures to established emotional phenomena, which would seem a quite important undertaking for the field. From our reading of the literature, these appear rather limited, although the few studies that have been conducted generally run contrary to theoretical expectations. Bar-On (2000), for example, reports positive correlations between EQ-i scores and time taken to complete emotional Stroop items. The idea that highly emotionally intelligent people take *longer* to process irrelevant emotional information and, therefore, are less adaptive seems circumspect. Similarly, studies have found no relationship between ESC measures and a variety of tasks measuring emotional processes (e.g., Fellner et al., 2007). And at best, correlations between ESC and EI measures (rather than forming an interesting hypothesis that needs to be explored as stated on p. 123) top out at around .20 (e.g., Zeidner et al., 2009).
3. *The little problem of faking ESC measures.* Grubb and McDaniel's (2007) demonstration that the EQ-i could be faked should be taken in a less cavalier fashion; for those interested in high stakes application of an assessment, a near full standard deviation change in scores is no trivial finding. Similar studies have yet to be conducted with the Goleman, trait EI, or any other so-called measure of the ESC model, but there is nothing in their technical make-up to suggest that anything but the same result would be obtained. And lest other-reports be used as a possible defense against this criticism, it is an open empirical issue whether other-reports are subject to halo effects in most assessment contexts.

With respect to putative measures of EI, there appears to be a misinterpretation of factor analytic studies conducted with the MSCEIT in the lead article. Rather than research supporting "both a single, underlying factor and the four-branch model" (p. 117), all available evidence points to a three-factor model, with no evidence to date for an independent factor of assimilating emotion in thought (see, e.g., Roberts et al., 2007). This set of findings impacts on the entire article: Without empirical support, should not this component be stricken from the definitional record of EI/ESC? In addition, we know a good deal more about the source of correlations between EI components and both personality and cognitive ability, and often it is a specific branch that is responsible for meaningful relationships. For example, it is not MSCEIT scores per se that correlate with verbal intelligence but rather emotional understanding. Similarly, the correlation between MSCEIT and Agreeableness derives largely from the emotional management factor (Roberts et al., 2008). We believe highlighting these more comprehensive findings is important because they help to shape precise theory and ultimately provide hints for possible targeted applications for the practitioner (Zeidner et al., 2009).

Finally, we are concerned that the article's treatment of ability measures focuses almost exclusively on the MSCEIT. Although in fairness the emergence of new paradigms are mentioned in the article, we believe a compelling case could be made for a wide array of assessments that might truly have moved the conversation concerning EI forward in this focal article. These include, but are not limited to, the multimodal emotional recognition test (Banziger, Grandjean, & Scherer, 2009); Freudenthaler and Neubauer's (2007) emotional management test; and our own research with multimedia assessments assessing empathy and emotional understanding in situated contexts (Roberts, MacCann, Matthews, & Zeidner,

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2010). And why are objective indicators of social intelligence (which are perhaps more promising than many critics appreciate; see, e.g., Carroll, 1993) neglected entirely in the focal article, whereas social competence is conjoined with emotional competence in the context of questionnaire assessment?

Conclusions

The target article glosses over some growing pains of a young field moving from childhood to preadolescence. The attempt to arrive at a universal definition of EI has not been successful. Measurement models should be evaluated against standard psychometric criteria not against a questionable definition. Such criteria include divergence from existing personality constructs, convergence with existing emotional measures, and the establishment of meaningful test–criterion relations. The proposed ESC construct appears to suffer from exactly the same deficiencies as EI itself, including lack of clear conceptualization and questionable measurement approaches.

Our proposal is to treat "EI" as a broad umbrella term for a variety of lines of research, just as we can study memory without presupposing a single dimension or system for memory. As noted previously, productive lines of research may be developed within different domains (temperament, information processing, emotion regulation, and learned skills). Correspondingly, different "EI" constructs may require different levels of theorization; for example, in relation to theories of biological bases for emotion, cognitive neuropsychology of emotional processing, self-regulation, and skill acquisition.

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