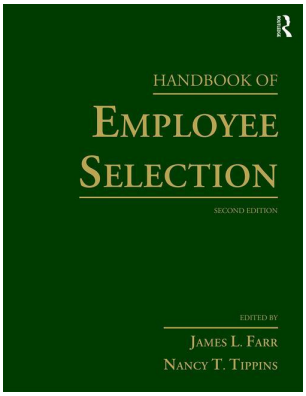

Handbook of Employee Selection

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Publication details
https://test.routledgehandbooks.com/doi/10.4324/9781315690193-15
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Published online on: 22 Mar 2017

15

Practical Intelligence, Emotional Intelligence, and Social Intelligence

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Over the years, practical intelligence, social intelligence, and especially emotional intelligence have received substantial attention in both the academic and practitioner literatures. However, at the same time, these individual difference "constructs" have also fueled controversies and criticisms, including their applications to employee selection. It is without doubt that their definition, dimensionality, and operationalization (measurement) have been much more questioned as compared to the more traditional or established constructs (i.e., cognitive ability, personality) in this section of the Handbook.

This chapter has two main objectives. The first objective is to review and clarify the conceptualization and measurement of these three constructs (or categories of constructs). In doing so, we aim to identify commonalities and differences among the three constructs. The second objective is to advance research on practical, social, and emotional intelligence. We aim to achieve both objectives by placing the three intelligence constructs in an integrative conceptual framework that relates them to traditional individual difference constructs and critical criterion constructs. We end by proposing directions for future research.

DEFINITIONS AND CONCEPTUALIZATIONS

In this section, we review how practical, emotional, and social intelligence have been conceptualized and the research that attempted to empirically test these conceptualizations.

Practical Intelligence

Sternberg and colleagues introduced the construct of practical intelligence in the mid- to late 1980s (Sternberg, 1988; Wagner & Sternberg, 1985). As a common thread running through the various definitions of practical intelligence, it is generally considered to refer to the ability of an individual to deal with the problems and situations of everyday life (Bowman, Markham, & Roberts, 2001). In lay terms, it can be characterized as "intuition" or "common sense," and it is often referred to as "street smart" to contrast with "book smart," which is used to characterize traditional analytical or academic intelligence.

A central element in practical intelligence is tacit knowledge. Sternberg, Wagner, Williams, and Horvath (1995) defined tacit knowledge as "action-orientated knowledge, acquired without

direct help from others, that allows individuals to achieve goals they personally value" (p. 916). This definition encompasses the key characteristics of tacit knowledge (see Hedlund et al., 2003). First, tacit knowledge is difficult to articulate because it is not formalized in explicit procedures and rules. Second, tacit knowledge is typically situationally specific procedural knowledge, telling people how to act in various situations. Third, individuals acquire tacit knowledge on the basis of their own everyday experience related to a specific domain. Thus, tacit knowledge is not formally taught; it is experience-based. Fourth, tacit knowledge is practical as it enables individuals to obtain the goals that they value in life. These characteristics exemplify the claim of practical intelligence and tacit knowledge as being constructs that are conceptually distinct from academic intelligence, technical job knowledge, or personality.

Research by Sternberg and colleagues as well as by others has found some support for or at least produced findings consistent with some of these claims. First, tacit knowledge seems to increase with experience. For example, business managers received higher tacit knowledge scores than business graduate students, who in turn outperformed undergraduate students, although sample sizes in these groups were often small (Wagner, 1987). Second, scores on tacit knowledge inventories showed low correlations (below .20) with measures of fluid and crystallized intelligence (Legree, Heffner, Psotka, Martin, & Medsker, 2003; Tan & Libby, 1997). Finally, Bowman et al. (2001) reviewed research on tacit knowledge in organizational, educational, and military settings and concluded that the assessment of tacit knowledge has certain promise for predicting performance in these real-world environments, although the level of prediction does not reach the values obtained with *g* (see also Van Rooy, Dilchert, Viswesvaran, & Ones, 2006). Although most of these results were obtained in educational, military, sales, or business contexts, Baum, Bird, and Singh (2011) also found evidence for the role of practical intelligence in the context of entrepreneurship: Practical intelligence interacted with growth goals to predict venture growth across four years.

Bowman et al. (2001) leveled various criticisms with respect to the construct of practical intelligence. From a conceptual point of view, questions have been raised whether practical intelligence (tacit knowledge) at all exists as a single construct that is different from other types of intelligence, job knowledge, and personality (see also Gottfredson, 2003; McDaniel & Whetzel, 2005). In particular, McDaniel and Whetzel (2005) put various claims related to practical intelligence (tacit knowledge) to the test. To this end, they used research related to situational judgment tests (SJTs), a measurement method that is closely related to tacit knowledge inventories. Consistent with research by Sternberg and colleagues, McDaniel and Whetzel concluded that such tests predict job performance and have incremental validity over more common selection procedures. However, they argued that there was no support for the other claims. Specifically, they cited studies showing that SJTs of practical intelligence were factorially complex and could not be represented by a general factor in factor analytic studies. They also reviewed research showing that these test scores were significantly related to scores on established constructs such as *g*, conscientiousness, emotional stability, and agreeableness. Later in this chapter, we argue that such criticisms are both right and wrong—they are right that practical intelligence is not a unitary construct, but they are wrong to conclude that the factorially complex results and significant correlations with established constructs imply that practical intelligence is not a distinct and valid construct.

Emotional Intelligence

Since the mid-1990s, emotional intelligence (EI) is probably the psychological construct that has received the greatest attention in both popular and academic literatures. Historically, a distinction is made between two conceptualizations of emotional intelligence, namely an ability EI model and a trait EI model (e.g., Matthews, Zeidner, & Roberts, 2007).

The first model conceptualizes EI as an ability akin to cognitive ability and measures it via performance-based tests. In this paradigm, EI is viewed as another legitimate type of intelligence. Hence, this model is also referred to as emotional cognitive ability or information processing emotional intelligence. Emotional intelligence is then defined as "the

ability to monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). This definition shows that the higher-order construct of emotional intelligence is broken down into four branches. The first branch—emotional identification, perception, and expression—deals with the ability to accurately perceive emotions in others' verbal and nonverbal behavior. Emotional facilitation of thought is the second branch, referring to the ability to use emotions to assist thinking and problem solving. Third, emotional understanding denotes the ability to analyze feelings, discriminate among emotions, and think about their outcomes. Finally, emotional management deals with abilities related to maintaining or changing emotions. We refer to Côte (2014) for an excellent and detailed overview of the different abilities under each branch.

The second model, the trait EI model, views EI as akin to personality and assesses it via self-report. In this model, emotional intelligence is defined as "an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (Bar-On, 1997, p. 16). As the name suggests, this model uses a broad definition of emotional intelligence. Abilities such as emotion perception are typically combined with non-cognitive competencies, skills, and personality traits. For example, one of the most popular mixed models (Bar-On, 1997) measures five broad factors and fifteen facets: (1) Intrapersonal (Self-Regard, Emotional Self Awareness, Assertiveness, Independence, and Self-Actualization), (2) Interpersonal (Empathy, Social Responsibility, Interpersonal Relationship), (3) Stress Management (Stress Tolerance and Impulse Control), (4) Adaptability (Reality Testing, Flexibility, and Problem Solving), and (5) General Mood (Optimism and Happiness). In the Goleman (1995) model, a similar expanded definition of emotional intelligence is used, referring to emotional intelligence as a set of learned competencies. Emotional intelligence competence is then defined as "an ability to recognize, understand, and use emotional information about oneself or others that leads to or causes effective or superior performance" (Boyatzis & Sala, 2004, p. 149). A distinction is further made among five main competency clusters (with various subcompetencies): self-awareness, self-regulation, motivation, empathy, and social skills. Given the trait-like nature of the mixed model, some researchers have suggested using terms such as "trait emotional intelligence," "emotional self-efficacy" (Petrides & Furnham, 2003), or "emotional self-confidence" (Roberts, Schulze, Zeidner, & Matthews, 2005).

Meta-analytic research (Van Rooy, Viswesvaran, & Pluta, 2005) demonstrated that these two models are not measuring the same constructs. Measures based on the two models correlated only .14 with one another. In addition, these two models had different correlates. Emotional intelligence measures based on the mixed model overlapped considerably with personality trait scores but not with cognitive ability. Conversely, EI measures developed according to an EI ability model correlated more with cognitive ability and less with personality. Other research has clarified that ability model measures correlate especially with verbal (crystallized) ability, with correlations typically between .30 and .40 (Mayer, Roberts, & Barsade, 2008). Hence, some have posited that the term "emotional intelligence" should be replaced by the term "emotional knowledge" (Zeidner, Matthews, & Roberts, 2004).

Besides the construct-related validity of emotional intelligence, its criterion-related validity has also been scrutinized. To this end, Côte (2014) reviewed three meta-analyses: Joseph and Newman (2010) found an uncorrected correlation of .16 between emotional intelligence (ability model) and job performance, whereas in O'Boyle, Humphrey, Pollack, Hawver, and Story (2011) this uncorrected correlation was .21. Finally, an earlier meta-analysis of Van Rooy and Viswesvaran (2004) that used both EI models revealed a correlation of .17 for predicting performance in a variety of settings (e.g., employment, academic).

There are especially conceptual and methodological problems associated with the mixed model of emotional intelligence (Mayer et al., 2008). First, the ambiguous (all-encompassing) definition and the very broad content of the mixed model have been criticized (e.g., Landy, 2005; Locke, 2005; Matthews, Roberts, & Zeidner, 2004). For example, Landy (2005) succinctly noted: "the construct [of emotional intelligence] and the operational definitions of the construct (i.e.,

the actual measurement instruments) are moving targets" (p. 419). Similarly, Locke (2005) posited that "the concept of EI has now become so broad and the components so variegated that no one concept could possible encompass or integrate all of them, no matter what the concept was called; it is no longer even an intelligible concept" (p. 426).

Another criticism relates to redundancy of the mixed model with Big Five personality traits. For instance, De Raad (2005) explored to what extent emotional intelligence (mixed model) can be expressed in terms of personality traits. To this end, he gathered a total of 437 items from EI inventories. Sixty-six percent of the EI descriptors could be classified in a well-known Big Five framework (The Abridged Big Five Dimensional Circumplex). The lion's share of the terms was categorized under Agreeableness and Emotional Stability. The main reason for items not being classifiable was that they were ambiguous, as they were often related to several Big Five factors. In other studies, the multiple correlation between Big Five scores and scores on mixed model EI measures ranged between .75 and .79 (Brackett & Mayer, 2003; Grubb & McDaniel, 2007). Other studies, however, found incremental validity of the mixed model over and above personality (Law, Wong, & Song, 2004; Tett, Fox, & Wang, 2005). Nonetheless, in the scientific community, there have been calls to give up the mixed model (despite its popularity in practice), to focus solely on the ability model (Daus & Ashkanasy, 2005), or at least not to refer to the mixed model as emotional intelligence (Cherniss, 2010).

In recent years, two meta-analyses have further clarified various aspects in this debate. First, Joseph and Newman (2010) examined the validity of emotional intelligence as conceptualized only in the ability model. They found support for a sequential relationship among emotional intelligence facets (emotion perception, understanding, and regulation) and job performance, with personality and cognitive ability as antecedents of these emotional intelligence processes. Second, Joseph, Jin, Newman, and O'Boyle (2015) examined the validity of emotional intelligence as conceptualized in the mixed model. Although Joseph et al. found a mean corrected correlation of .29 between mixed emotional intelligence and supervisor-rated job performance, this relationship became .00 after controlling for already-established constructs such as ability EI, self-efficacy, personality, and cognitive ability. Taken together, these two meta-analyses demonstrate that further progress on emotional intelligence is to be made via more refined conceptualizations and measurement of the ability EI model.

That said, the ability model is not without limitations either. For example, a large-scale examination of many emotional intelligence, cognitive intelligence, and personality measures showed that emotion perception (as represented by measures of perception of emotions in faces and pictures) was the only branch of the four branches of the ability model that could not be classified under established measures (Davies, Stankov, & Roberts, 1998). But even the emotion perception construct has drawbacks, as the construct does not seem to have generalizability across different measures (Gohm, 2004). That is, existing emotion perception measures correlate lowly among themselves.

In comparing the findings from the ability and the trait models, a major methodological problem exists due to a method-construct confound resulting from the fact that the ability model is often measured using performance-based tests, whereas the trait model is often measured using self-reports. In order to advance research on the comparison of ability and trait models of emotional intelligence (and also on the comparison of these models when applied to practical intelligence or social intelligence), rigorous designs that allow us to clearly isolate construct and method variances are needed (Chan & Schmitt, 2005).

Social Intelligence

Of the three intelligence constructs, social intelligence has the longest history. The idea goes back to Thorndike (1920), who defined social intelligence as "the ability to understand and manage men and women, boys and girls—to act wisely in human relations" (p. 228). As noted

by Landy (2005), Thorndike did not build a theory of social intelligence, but he used the notion of social intelligence only to clarify that intelligence could manifest itself in different facets (e.g., abstract, mechanical, social).

Social intelligence has a checkered history. Early studies tried to distinguish social intelligence from academic intelligence (e.g., Hoepener & O'Sullivan, 1968; Keating, 1978), but these research efforts were unsuccessful. The problem was that measures of social intelligence did not correlate highly among themselves and that academic intelligence and social intelligence formed one factor. Methodologically, it was troublesome that both intelligences were measured with the same method (paper-and-pencil measures). The early research led to the conclusion that the "putative domain of social intelligence lacks empirical coherency, at least as it is represented by the measures used here" (Keating, 1978, p. 221).

Two advancements led to more optimism. The first was the distinction between *cognitive* social intelligence (e.g., social perception or the ability to understand or decode verbal and nonverbal behaviors of other persons) and *behavioral* social intelligence (effectiveness in social situations). Using this multidimensional definition of social intelligence and multiple measures (self, teacher, and peer ratings), Ford and Tisak (1983) were able to distinguish social intelligence from academic intelligence. In addition, social intelligence predicted social behavior better than academic intelligence (see also Marlowe, 1986). The second advancement was the use of multitrait-multimethod designs (and confirmatory factor analysis) to obtain separate and unconfounded estimates of trait and method variance (Jones & Day, 1997; Wong, Day, Maxwell, & Meara, 1995).

These more sophisticated multitrait-multimethod designs have brought further evidence for the multidimensionality of social intelligence and for its discriminability vis-à-vis academic intelligence. For example, the aforementioned distinction made between cognitive social intelligence and behavioral social intelligence has been confirmed (e.g., Wong et al., 1995). Similarly, a distinction is often made between fluid and crystallized social intelligence. The fluid form of social intelligence refers to social-cognitive flexibility (the ability to flexibly apply social knowledge in novel situations) or social inference. Conversely, a term such as social knowledge (knowledge of social etiquette, procedural and declarative social knowledge about social events) denotes the more crystallized component of social intelligence (Jones & Day, 1997). Despite these common findings, the dimensions, the definitions, and measures of social intelligence still vary a lot across studies. Along these lines, Weis and Süss (2005) provided an excellent overview of the different facets of social intelligence that have been examined. This might form the basis for adopting a more uniform terminology in the description of social intelligence subdimensions.

Interest in social intelligence has also known a renaissance under the general term of social effectiveness constructs. According to Ferris, Perrewé, and Douglas (2002), social effectiveness is a "broad, higher-order, umbrella term, which groups a number of moderately related, yet conceptually distinctive, manifestations of social understanding and competence" (p. 50). Examples are social competence, self-monitoring, emotional intelligence, social skill, social deftness, practical intelligence, etc. The value of social skills has been especially scrutinized. Similar to social intelligence, social skills are posited to have a cognitive component (interpersonal perceptiveness) and a behavioral component (behavioral flexibility; Riggio, 1986; Schneider, Ackerman, & Kanfer, 1996). Another interesting framework of social skills was proposed by Klein, DeRouin, and Salas (2006). They distinguished among 10 social skills, which they more parsimoniously grouped under two meta social skills (communication and relationship building).

A key difference between social skills and personality traits is that the former are learned (i.e., an ability), whereas the latter are relatively stable. Research has found that they are only moderately (.20) correlated (Ferris, Witt, & Hochwarter, 2001), but both constructs are also related in that social skills enable personality traits to show their effects (Ferris et al., 2001; Hogan & Shelton, 1998). Research has confirmed that social skills moderate the effects of personality traits (conscientiousness) on job performance (Witt & Ferris, 2003). Social skills were also found to have direct effects on managerial job performance, although personality and cognitive ability were not controlled for in most studies (Semadar, Robins, & Ferris, 2006).

Conclusions

Our review of practical, social, and emotional intelligence highlights that these three constructs share remarkable similarities. Specifically, we see at least three parallels. First, the origins and rationale behind each of the constructs can be summarized as "going beyond *g*". Cognitively oriented measures of ability and achievement have been traditionally used in employment and educational contexts. However, at the same time there has always been substantial interest in exploring possible supplemental ("alternative") predictors for broadening the constructs measured and reducing possible adverse impact. Supplementing cognitive with alternative predictors is seen as a mechanism for accomplishing this goal (Sackett, Schmitt, Ellingson, & Kabin, 2001). Whereas social intelligence is the oldest construct, practical intelligence came into fashion at the end of the 1980s. Since Goleman's (1995) book, emotional intelligence is the newest fad. Every time, the construct was introduced as the panacea for the problem of an exclusive reliance on *g*. We agree that there is a need to go beyond *g* and identify new and *non-g* constructs, but a new construct has little scientific explanatory and utility value if it is defined solely by negation (i.e., as *non-g*). Hence, good construct-related validity evidence for the three constructs is needed. The current state of research indicates to us that such efforts have been undertaken for social and emotional intelligence (ability model). Still, more rigorous construct validation studies are needed. Second, the conceptualizations of these three constructs have salient parallels. Each of these three constructs has various definitions, is multidimensional, and there exists debate about their different dimensions. Third, for each of these constructs, investigations of incremental validity over and above more established constructs, such as cognitive ability and personality, have been the focus of debate and research.

So, are there conceptual differences among the three constructs? According to Landy (2005), emotional intelligence as a so-called new construct has simply replaced the older notion of social intelligence. Similarly, Bowman et al. (2001) posited that "it is not certain to what extent tacit knowledge, social, and EQ measures are structurally independent" (p. 148). Although our review shows that these three constructs overlap, it is possible to make at least some subtle distinctions. On the one hand, emotional intelligence might be somewhat narrower than social intelligence because it focuses on emotional problems embedded in social problems (Mayer & Salovey, 1993). That is probably why Salovey and Mayer (1990) defined emotional intelligence as a subset of social intelligence (p. 189). Conversely, one might also posit that emotional intelligence is broader than social intelligence because internal regulatory processes/emotions are also taken into account, which is not the case in social intelligence. Despite these differences, some authors have grouped social and emotional intelligence under the umbrella term of social and emotional effectiveness constructs (Heggestad & Morrison, 2008; Schlegel, Grandjean, & Scherer, 2013). Clearly, practical intelligence with its emphasis on real-world problems is more distinct than the other two constructs as it makes no reference to interpersonal skills (Austin & Saklofske, 2005). Domain specificity is another aspect of tacit knowledge, which contrasts to the more generic nature of social and emotional intelligence. In any case, these conceptual distinctions are open to investigation because few studies have explicitly examined the three constructs together (Weis & Süss, 2005).

MEASUREMENT APPROACHES

In the previous section, we showed that the conceptual debate around practical, social, and emotional intelligence shared many parallels. The same can be said about their measurement because the similarities in how practical intelligence, social intelligence, and emotional intelligence are measured are striking. Generally, at least[1] six measurement approaches might be distinguished: (1) self-reports, (2) other-reports, (3) interviews, (4) tests, (5) situational judgment tests, and (6) assessment center exercises. The following sections discuss each of these approaches, including their advantages and disadvantages. Some examples of instruments are also given, and these are summarized in Table 15.1 (see Côte, 2014, for a more comprehensive list of measures).

TABLE 15.1

Overview of Methods (Including Some Examples) for Measuring Practical, Emotional, and Social Intelligence

	Ability Emotional Intelligence Model	*Trait Emotional Intelligence Model*	*Practical Intelligence*	*Social Intelligence*
Self-reports	• WLEIS • SREIT • MEIA • SUEIT	• EQ-I • ECI • TMMS • TEIQue • AES	• Self-reports of people's behavior in everyday situations	• Social skills inventories • TSIQue
Other-reports	• Same as self-reports • Workgroup Emotional Intelligence Profile	• Same as self-reports	• Other-reports of people's behavior in everyday situations	• Same as self-reports
Performance-based Tests	• MSCEIT • DANVA2 • PONS • JACBART • EARS • VOCAL-I • MSFDE • MERT	• No known examples	• Basic Skills Tests	• LEAS • IPT-15 • Four/Six-Factor Tests of Social Intelligence • MTSI
Interviews	• Interview rating on components of the four-branch model of Mayer, Salovey, and Caruso	• Interview rating on mixed model emotional intelligence competencies (interpersonal sensitivity, stress tolerance, etc.)	• Interview rating on people's reported behavior in everyday situations	• Interview rating on applied social skills
Situational Judgment Tests (SJTs)	• STEU • STEM • TEMINT • MEMA	• SJTs that aim to measure mixed model emotional intelligence competencies	• Tacit Knowledge Inventories	• George Washington Social Intelligence Test (Judgment in Social Situations)
Assessment Centers (ACs)	• AC rating on components of the four branch model of Mayer, Salovey, and Caruso	• AC rating on mixed model emotional intelligence competencies	• Case Situational Problems	• AC rating on applied social skills

Note. Abbreviations are explained in the text.

Self-Reports

The self-report approach presents respondents with descriptive statements and asks them to use a sort of rating scale to indicate the extent to which they agree or disagree with the respective statements. An important advantage of self-report measures is that they can be administered inexpensively and quickly to large groups of respondents.

Examples of the self-report approach are many. In fact, most examples of self-report EI measures are based on the mixed model approach to emotional intelligence. Examples are the Emotional Competence Inventory (ECI; Sala, 2002), the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), EQ-I (Bar-On, 1997), and the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides & Furnham, 2003). Other EI measures are based on the four-branch model (or its predecessors) (Salovey & Mayer, 1990) but use a self-report methodology (instead of performance-based tests) for measuring it. Some researchers have categorized these measures as a third stream within the emotional intelligence domain (apart from

the ability and mixed models, e.g., Daus & Ashkanasy, 2005; O'Boyle et al., 2011). Examples are the Wong Law Emotional Intelligence Scale (WLEIS; Law et al., 2004; Wong & Law, 2002), the Multidimensional Emotional Intelligence Assessment (MEIA; Tett et al., 2005), the Swinburne University Emotional Intelligence Test (SUEIT; Palmer & Stough, 2001), or the Schutte Self-Report Emotional Intelligence Test (SREIT; Schutte et al., 1998). We refer to Pérez, Petrides, and Furnham (2005) for a comprehensive list of trait EQ measures. There exist also self-report inventories of social intelligence/social skills (e.g., Ferris et al., 2001; Riggio, 1986; Schneider et al., 1996). We are not aware of self-report instruments (excluding SJTs as self-report measures) that assess tacit knowledge.

In the personality domain, there is a longstanding history of using self-report measures and an equally long debate over their use. The debate and issues concerning the use of self-report measures in personality research (see Connelly & Ones, 2010) is generalizable to the use of self-report measures in assessing social and emotional intelligence. A detailed review of the pros and cons of self-report measures is beyond the scope of this chapter. Suffice it to say that self-report data are by no means perfect, and they are in principle susceptible to various validity problems, such as lack of self-insight and/or faking (e.g., Christiansen, Janovics, & Siers, 2010; Lievens, Klehe, & Libbrecht, 2011; Tett et al., 2012) and inflation of correlations due to common method variance. However, it is noteworthy that the severity of many of the purported problems of self-report data may be overstated.

Other-Reports

Other-reports (or informant reports) have also been used for measuring emotional and social intelligence. One reason is that knowledgeable others might provide less lenient and more reliable measurement. Another reason is that multidimensional constructs such as emotional and social intelligence inherently have an important interpersonal component. Hence, it makes sense that in other-reports the same emotional and social intelligence scales as listed above are used, with others (e.g., peers, colleagues, teachers, parents, friends) now rating the focal person on descriptive statements. For example, the ECI of Goleman can also be completed by peers or supervisors. There also exist EI measures that were specifically developed for use in team settings. For instance, Jordan, Ashkanasy, Hartel, and Hooper (2002) developed a specific work group EI measure, namely the Workgroup Emotional Intelligence Profile.

Although there exists a large amount of research supporting the use of peer ratings in the personality domain (e.g., Borkenau & Liebler, 1993; Funder, 1987; Kenny, 1991), research with other-based EI measures is slowly catching up. Van der Zee, Thijs, and Schakel (2002) confirmed that peer ratings of emotional intelligence were more reliable. However, they also found that these peer ratings suffered from leniency. Law et al. (2004) reported that peer-reports of a trait-based EI measure had substantial incremental validity over self-reports of emotional intelligence and personality. So, it seems beneficial to use peers for mixed model EI measures. So far, Elfenbein, Barsade, and Eisenkraft (2015) have conducted the largest examination of peer-reports in the context of emotional intelligence. Interestingly, their data came from self- and other-reports in workplace settings. They found evidence of inter-rater agreement among others' ratings of the focal person and of self–other agreement. Three other key findings were that (1) others could distinguish relatively well among the different emotional intelligence branches; (2) the other ratings predicted interdependent task performance, even after controlling for likability; and (3) these predictions were more accurate than those based on self-rated or ability emotional intelligence measures.

Performance-Based Tests

Whereas both self-reports and peer-reports are assumed to be measures of typical performance, performance-based tests are posited to measure maximal performance. The rationale behind these

tests parallels the one behind cognitive ability tests, as these tests present people with social or emotion-based problem-solving items. For example, in popular tests of emotion perception, individuals are presented with faces, voices, or pictures and are then asked to describe the associated emotions.

Historically, performance-based tests have been used for measuring social intelligence. An often-cited example is O'Sullivan and Guilford's (1965) (O'Sullivan, Guilford, & deMille, 1965) tests of Social Intelligence (see Landy, 2006, for other older examples). A more modern example is the Levels of Emotional Awareness scale (LEAS; Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990), although this test has also been used as a measure of emotional intelligence (e.g., Barchard, 2003). Similarly, the Interpersonal Perception Task-15 (IPT-15; Costanzo & Archer, 1993) is a performance-based measure that presents videotapes to participants.

These tests have known a renaissance in the context of the ability model of emotional intelligence, with the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) as the best-known example. Other well-known examples are the Japanese and Caucasian Brief Affect Recognition Test (JACBART; Matsumoto et al., 2000), the Diagnostic Analysis of Nonverbal Accuracy (DANVA2; Nowicki, 2004), the Profile of Nonverbal Sensitivity (PONS; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979), the Emotional Accuracy Scale (EARS; Mayer & Geher, 1996), The Montreal Set of Facial Displays of Emotion (MSFDE; Beaupré, Cheung, & Hess, 2000), and the Index of Vocal Emotion Recognition (Vocal-I; Scherer, Banse, & Wallbott, 2001).

As noted by Spector and Johnson (2006), there is a difference between knowledge about emotions and the actual skill. It is not because one knows how to regulate one's emotion in the face of problems that one will also do this in an actual context. With regard to practical intelligence, this problem has been circumvented by using basic skills tests (Diehl, Willis, & Schaie, 1995). These tests measure among others the ability to perform daily tasks such as cooking or using a bus schedule. Scoring constitutes another problem of performance-based tests. In contrast to cognitive ability tests, EI tests using the ability model, for instance, do not have objectively correct answers (with the exception of emotion perception tests constructed through digitally morphing faces).

Interviews

Interviews constitute another possible method for measuring practical, social, and emotional intelligence. In the past, especially social skills (social intelligence) have been frequently measured in interviews. This is demonstrated by the meta-analysis of Huffcutt, Conway, Roth, and Stone (2001), who reviewed the type of constructs most frequently targeted by interviews in 47 studies. Specifically, social skills were measured in 27.8% of the interviews. Moreover, applied skills were twice as frequently rated in high-structure interviews (behavior description interviews and situational interviews) as compared to low-structure interviews (34.1% vs. 17.7%).

Essentially, interviews are measurement methods that can be used to assess a wide variety of constructs. On the basis of multiple job-related questions, interviewees are asked to describe behavior that is relevant for constructs deemed important. Therefore, interviews could also be used for measuring practical intelligence (Fox & Spector, 2000) and emotional intelligence (mixed model; Schmit, 2006). Schmit notes how interview questions can try to elicit situations from interviewees wherein they had to recognize emotions of others and how they dealt with this situation. Yet, in interviews samples of behavior can be observed only for specific dimensions (e.g., interpersonal skills or oral communication skills, Van Iddekinge, Raymark, & Roth, 2005). For other dimensions, candidates report past behavior (in behavior description interviews) or intended behavior (in situational interviews).

Situational Judgment Tests

SJTs might be another approach for measuring practical, social, and emotional intelligence (Chan, 2000, 2006; O'Sullivan, 2007; Schulze, Wilhelm, & Kyllonen, 2007). SJTs are measurement

methods that present respondents with job-related situations and sets of alternate courses of action to these situations. Per situation, respondents either select the best and worst options or rank/rate each of the alternative actions in terms of their effectiveness. Meta-analytic research in employment settings documented the predictive and incremental validity of SJTs in predicting job performance over and above cognitive ability scores and personality ratings (Chan & Schmitt, 2002; McDaniel et al., 2001; McDaniel, Hartman, Whetzel, & Grubb, 2007).

As respondents have to respond to realistic (written and especially video-based) scenarios, SJTs might constitute a more contextualized (ecologically valid) way of measuring practical, social, and emotional intelligence. This judgment in a realistic context contrasts to the decontextualized nature of standardized tests. Technological advancements make it possible to develop interactive SJTs (aka branched SJTs) that present different video fragments contingent upon responses to earlier video fragments. This allows the SJT to simulate the dynamics of interaction. Similar to EI tests (ability model), multiple-choice SJTs are scored using algorithms based on experts (excellent employees) or scored empirically based on the responses of large pilot samples.

Over the years, SJTs have been developed for measuring each of the three constructs. First, as noted by McDaniel, Morgeson, Finnegan, Campion, and Braverman (2001), the first SJTs were social intelligence tests, namely the Judgment in Social Situations subtest of the George Washington Social Intelligence Test. Second, instruments very similar to SJTs are used under the label "tacit knowledge tests" for measuring practical intelligence (Sternberg et al., 1995). Examples are the Tacit-Knowledge Inventory for Managers or the Tacit-Knowledge Inventory for Military Leaders. Third, research has explored the use of SJTs for measuring two branches of Mayer and Salovey's EI model. Specifically, MacCann and Roberts (2008) developed the Situational Test of Emotional Understanding (STEU) and the Situational Test of Emotion Management (STEM). Whereas these prior SJTs relied on a paper-and-pencil format, some EI branches (e.g., emotion management) might be better measured via multimedia items (see Lievens & Sackett, 2006, for similar arguments about assessing interpersonal skills). Recently, MacCann, Lievens, Libbrecht, and Roberts (2016) developed a multimedia SJT for reliably and validly measuring emotional management (aka MEMA). As compared to the MSCEIT's written emotional management test, they showed that scores on the MEMA tapped into not only cognitive ability but also emotion perception. In the future, virtual and avatar-based environments might also be designed for measuring emotional intelligence facets.

Assessment Center Exercises

Whereas SJTs are low-fidelity simulations that require candidates to pick the "correct" answer from a limited set of predetermined response options instead of asking them to actually show how they would handle a specific situation, a final possible approach for measuring practical, social, and interpersonal intelligence consists of putting people in a simulated situation, observing their actual behavior, and then making inferences about their standing on the construct of interest. Performance (or authentic) assessment is often used as a general term for describing this strategy. In industrial and organizational psychology, this contextualized approach focusing on actual behavior is exemplified by assessment centers (ACs). In ACs, several job-related simulations (e.g., role-play, interview simulation, in-basket, group discussion) aim to elicit behavior relevant to the constructs under investigation. The assumption is that individuals' responses to these simulations reflect the responses that they would exhibit in the real world. Multiple trained assessors observe and rate the candidates on these constructs.

According to Gowing (2001), the roots of the measurement of social, practical, and emotional intelligence can be traced to this AC approach. Although these constructs are not explicitly measured in AC exercises, they correspond well to the typically competencies targeted by AC exercises. In particular, some AC competencies, such as flexibility, awareness for others, interpersonal skills, flexibility, stress tolerance, and communication, have clear resemblances with practical, emotional, and social intelligence. The context sensitivity of what constitutes good performance in AC exercises and the ease with which situations may temporally unfold or

change through injecting novel demands as the exercise progresses are features of the AC that makes it a useful method for measuring the adaptability competencies associated with practical, emotional, and social intelligence (Chan, 2000).

Several researchers have explicitly related the measurement of these AC dimensions to the measurement of one or more of the three intelligence constructs. Specifically, Spector and Johnson (2006) presented various examples of how AC exercises might be adapted for measuring emotional intelligence. For example, in a role-play a participant might be asked to deal with an irate customer or to comfort an upset colleague. Assessors might then rate the assessees on broad-based competencies or on more detailed verbal/nonverbal behaviors. Another example is Stricker and Rock's (1990) Interpersonal Competency Inventory (ICI), wherein participants have to respond orally to videotaped scenes (for a more recent example with webcam-captured performances, see Lievens, De Corte, & Westerveld, 2015). Similarly, Sternberg and colleagues have argued that the typical AC exercises are very useful for assessing practical intelligence. For example, Hedlund, Wilt, Nebel, Ashford, and Sternberg (2006) developed so-called case scenario problems as a skill-based measure of practical intelligence. These case scenario problems consist of a fictitious business case, wherein participants are given information such as the history of the organization, their role, memos, e-mails, and financial tables. Individuals have to use their practical intelligence (practical problem-solving skills) to solve these contextual and poorly defined problems. Clearly, this methodology is somewhat similar to the case analysis and in-basket formats that have been used for decades in ACs.

Although the emphasis on simulations and actual behavior results in good AC validities (Arthur, Day, McNelly, & Edens, 2003) and little adverse impact (Terpstra, Mohamed, & Kethley, 1999), scores are often situation specific (Lance, Lambert, Gewin, Lievens, & Conway, 2004). That is, ratings of the same competency do not converge well across exercises. In addition, there is little distinction among dimensions within a specific exercise as within-exercise dimension ratings are highly correlated. Although these findings were traditionally interpreted as indicative of poor convergent and discriminant validity evidence for AC ratings, this has now changed. As reviewed by Lance (2008), the situation specificity of AC results is regarded as reflecting true cross-situational variability of candidates across exercises.

Combinations

Although we discussed the measurement approaches in separate sections, it is also possible to adopt combinations of them. For instance, MacCann, Wang, Matthews, and Roberts (2010) used an SJT for assessing emotion management with not only self-reports but also via an other-report format. So, they also asked a significant other what the focal person would do in a given situation. The correlation between self and other SJT scores was low (.19). Although the other-report SJT scores predicted the criteria as well as the typical self-report SJT scores, the construct validity of the two measures was different. That is, SJT scores on the basis of other-reports had lower means, higher Extraversion correlations, lower Agreeableness correlations, and lower correlations with *g*.

Conclusions

Our review of measurement approaches suggests parallels in how the three constructs are measured. Although it is often thought that the three constructs are primarily measured with self-reports and performance tests, this section highlighted that a wide array of other options are possible. Specifically, interviews, peer-reports, and instruments with somewhat more fidelity, such as SJTs and AC exercises, are viable measurement approaches. Future research should further explore differences and communalities between these alternative measurement methods.

CONCEPTUAL FRAMEWORK FOR EXAMINING PRACTICAL, EMOTIONAL, AND SOCIAL INTELLIGENCE

In Figure 15.1, we present a conceptual framework that we adapted from Chan and Schmitt (2005) to organize the discussion and guide future research on the validity of practical, emotional, and social intelligence. Following Chan and Schmitt, the framework construes all three types of intelligence as competencies that are multidimensional constructs, each of which is a partial mediator of the predictive or causal effect of unidimensional KSAOs on job performance or other job-relevant criteria. In addition, our framework construes the three types of intelligences as distinct but related competencies with both common and unique construct space, as depicted by the three overlapping circles representing practical, emotional, and social intelligence.

The framework in Figure 15.1 shows that both proponents and opponents of each of these three constructs are right and wrong in different ways. Specifically, the opponents typically focus on the KSAOs and correctly argue that practical, emotional, and social intelligences are not factorially pure (unitary) KSAOs, but they incorrectly dismiss the validities and value of these intelligence constructs. Conversely, the proponents typically focus on the multidimensional competencies and correctly argue that practical, emotional, and social intelligences are proximal (and hence sometimes better) predictors of performance and other criteria, but they incorrectly ignore the important role of KSAOs in determining the nature of these intelligence constructs.

Our framework is consistent with and may reconcile several findings and the debate over the value of the three types of intelligence. For example, each of the three intelligence constructs is inherently multidimensional in the sense that it is conceptualized as a multidimensional competency resulting from a combination of several different individual difference constructs. The relationships linking each type of intelligence and the various individual difference constructs explain the consistent findings from factor analytic studies that the intelligence measure is factorially complex and the data from the measure do not produce good fit with a single-factor model. These relationships also explain the significant and sometimes substantial correlations between the intelligence measure and the established measures of traditional KSAOs, such as cognitive ability and personality traits. In addition, these relationships provide the conceptual

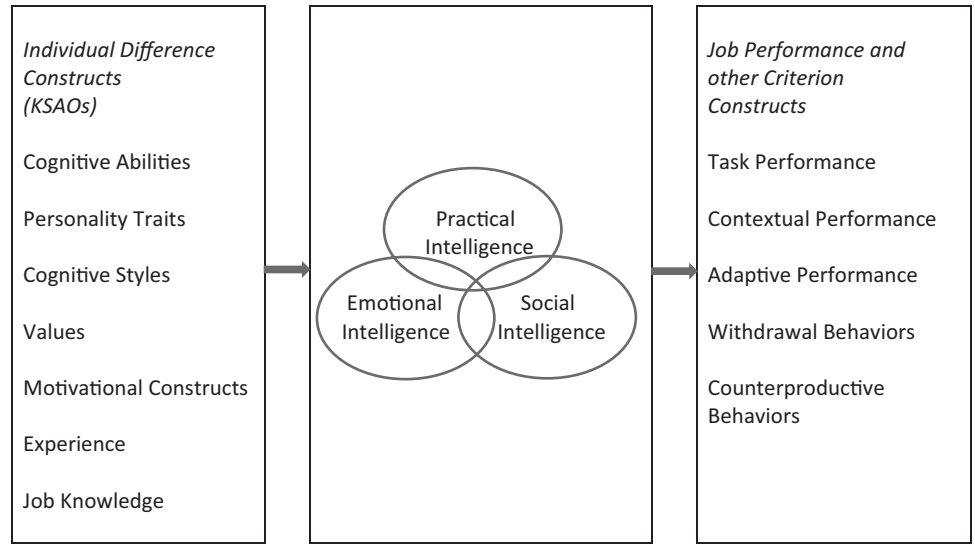

FIGURE 15.1 Conceptual Framework for Examining Practical, Emotional, and Social Intelligence

(adapted from Chan & Schmitt, 2005).

bases for examining ability models, trait models, and mixed models of emotional (as well as practical or social) intelligence.

The findings on the substantial zero-order validities and incremental validities of practical intelligence in predicting job performance over the prediction provided by cognitive ability and personality traits (e.g., Chan & Schmitt, 2002) are consistent with the proximal status of practical intelligence competencies (relative to the distal status of KSAOs) in the prediction of job performance. Similarly, the proximal status of emotional and social intelligence also explains the findings from studies that showed zero-order and incremental validities of these intelligence measures in the prediction of job performance and other criteria (for meta-analytic review of studies). Interestingly, Figure 15.1 may also explain why SJTs and ACs, which are multidimensional measures, do better than factorially pure measures of single unitary constructs (e.g., cognitive ability, personality) in predicting job-relevant performance criteria, which are often multidimensional in nature. That is, much of what SJTs and ACs are assessing may well be multidimensional competencies that are similar, if not identical, to practical, emotional, and social intelligence.

We believe the conceptual framework in Figure 15.1 is consistent with existing findings and reconciles much of the debate on the validity of practical, emotional, and social intelligence, but more direct empirical support of the framework is certainly needed. We reiterate the call in Chan and Schmitt (2005) that to obtain more direct evidence for a framework that construes the intelligence competencies as multidimensional mediators in the relationship between KSAOs and job performance (and other criteria), we would need to specify and test hypothesized and alternative structural equation models (based on primary data from a single study or an accumulation of results from past studies using meta-analyses) linking KSAOs, intelligence competencies, and job performance or other criterion outcomes. Future research could derive theory-driven specific models from the general framework depicted in Figure 15.1 to empirically examine the validity of one or more of the three intelligence constructs that would facilitate the interpretation of the correlations between the intelligence construct and more established individual difference KSAOs as well as the zero-order and incremental validities of the intelligence construct in predicting different criterion outcomes. The recent meta-analysis of Joseph et al. (2015) constitutes a good example of applying a similar framework for illuminating the construct saturation and validity of mixed model EI measures. In the following section, we suggest various strategies for formulating theory-driven testable models that are likely to advance research in ways that make conceptual and practical contributions to the study of these constructs.

STRATEGIES FOR FUTURE RESEARCH

We suggest the following strategies for future research on practical, social, and emotional intelligence: (1) developing better measures, (2) matching predictor and criterion, (3) disentangling methods and constructs, (4) going beyond bivariate relationships, (5) using longitudinal validation designs, and (6) adopting a multilevel perspective.

Developing Better Measures

When reviewing the domain of emotional intelligence, Miners, Côte, and Lievens (2017) counted that in one year alone more than 50 different measures were used for ostensibly assessing emotional intelligence. In addition, research typically shows that convergent validity among the scores on these different measures is hard to establish because the scores do not substantially correlate with each other. In line with Miners et al. (2017), we therefore call researchers to pay much more attention to the underlying theoretical processes that intervene between the construct of emotional intelligence and responses to the EI items that together constitute an EI measure. This admonition is derived from a seminal paper by Borsboom, Mellenbergh, and Van Heerden (2004), which posited that in order to assess the validity of measures, it is pivotal to relate variation in a construct with variation on the responses of the items as a precursor to the traditional content-related, construct-related, and criterion-related validation process.

To stimulate further research, Miners et al. (2016) outlined three specific strategies that researchers can adopt. They also exemplified how researchers can put these strategies into action in the context of the emotion perception branch. However, these strategies should also be applicable to other branches and for new EI abilities (see Côté & Hildeg, 2011). Although this call for better EI measurement is longstanding (e.g., Riggio, 2010; Ybarra, Kross, & Sanchez-Burks, 2014), we highlight it again here as a key area for future research.

Matching Between Predictor and Criterion

An important development in personnel selection research is the movement away from general discussions of predictors as "valid" to consideration of "valid for what?" This development of more nuanced questions about predictor-criterion relationships was spurred by the taxonomic work on job performance led by Campbell, McCloy, Oppler, and Sager (1993) that differentiated performance into multiple distinct dimensions (Campbell, McCloy, Oppler, & Sager, 1993). Since then, selection researchers have significantly expanded the notion of job performance to include distinct performance dimensions, such as those listed in the criterion space of the framework in Figure 15.1. The expansion of the definition of performance and recognition of the multidimensional nature of performance led to streams of research demonstrating that different predictor constructs and selection tests will offer optimal predictive validity depending on the performance dimension(s) of interest (Chan, 2005a). For example, research has shown that task performance is better predicted by cognitive ability tests, whereas contextual performance is better predicted by personality tests (McHenry, Hough, Toquam, Hanson, & Ashworth, 1990). The key message here is that one needs to carefully attend to the constructs underlying both predictors and criterion dimensions in developing hypotheses about predictor-criterion relationships.

Research on practical, social, and emotional intelligence has only begun linking these constructs to relevant criterion variables (Cherniss, 2010; Landy, 2005). These three constructs are often proposed to predict almost everything. Probably, this is best exemplified by studies investigating the validity of emotional intelligence for predicting academic performance (e.g., Amelang & Steinmayr, 2006; Barchard, 2003; Jaeger, 2003; Newsome, Day, & Catano, 2000; Parker, Hogan, Eastabrook, Oke, & Wood, 2006). There is little theoretical basis or conceptual match between emotional intelligence and grade point average (GPA). Clearly, emotional intelligence will have at best moderate predictive value for predicting an omnibus cognitively loaded criterion such as GPA. Hence, we need studies that carefully match the three intelligence constructs and their subdimensions to relevant criteria. For example, Libbrecht, Lievens, Carette, and Côte (2014) discovered that emotional intelligence was a good predictor of grades in courses that require interpersonal skills but not of overall GPA. Importantly, on a wider meta-analytical level, there is now also support for the predictor-criterion matching logic, because Joseph and Newman (2010) found that the validity of EI measures for predicting job performance was higher in jobs high on emotional labor than for jobs low on emotional labor.

Referring to Figure 15.1, we could apply the conceptual matching between predictor and criterion to foster our understanding of the link between the three intelligence constructs and the difference dimensions of job performance. For instance, task performance might be predicted by ability-based emotional intelligence, whereas contextual performance might be predicted by trait-based emotional intelligence. As another example, practical intelligence might predict adaptive performance better than it predicts routine task performance.

Disentangling Methods and Constructs

In the field of I-O psychology, there is increased recognition that methods should be distinguished from constructs in the comparative evaluation of predictors (Arthur & Villado, 2008; Arthur et al., 2003; Bobko, Roth, & Potosky, 1999; Chan & Schmitt, 1997, 2005; Lievens, Harris,

Van Keer, & Bisqueret, 2003). Constructs refer to the substantive conceptual variables (e.g., conscientiousness, cognitive ability, finger dexterity, field dependence-independence, reaction time, visual attention, emotional intelligence) that the measures were designed to assess. Conversely, methods refer to the tests, techniques, or procedures (e.g., paper-and-pencil tests, computer-administered tests, video-based tests, interviews, and ACs, self-reports, peer-reports) used to assess the intended constructs. This distinction between constructs and methods is especially crucial for multidimensional predictors (Bobko et al., 1999). Conceptual and methodological issues of variance partition associated with the construct-method distinction and their applications to constructs such as practical intelligence are available in Chan and Schmitt (2005).

Given the multidimensional nature of practical, social, and emotional intelligence, clarity of the method-construct distinction is critical. As shown in Table 15.1, practical, social, and emotional intelligence might be measured in multiple ways. As noted previously, social intelligence research has adopted such multitrait-multimethod design and cleared some of the confusion around this construct. For example, social intelligence constructs (e.g., social understanding, memory, and knowledge) were operationalized in a multitrait-multimethod design applying verbal, pictorial, and video-based performance measures.

A similar strategy could be followed for clarifying some of the confusion related to emotional intelligence. So far, research mainly compared self-reports of ability-based emotional intelligence or mixed model emotional intelligence to personality inventories. However, many more strategies are possible. One possibility is to operationalize a specific branch of the EI ability model via different measurement approaches (Wilhelm, 2005). For example, the emotion understanding branch of the ability model might be measured via the MSCEIT and an SJT. Similarly, the emotion perception branch might be measured via faces, pictures, movies, voices, etc. As another example, people might complete an ability EI test, they might provide self-reports of their emotional intelligence, and they might be rated by trained assessors on emotional intelligence (or conceptually similar competencies such as interpersonal sensitivity) in AC exercises. Such research designs (see also Landy, 2006) focus on convergent validity and enable us to answer key questions such as: How well do these different methods converge in assessing emotional intelligence? How much variance is accounted for by method factors and how much variance is accounted for by substantive construct factors?

It is important to distinguish among methods and constructs because comparative evaluations of predictors might be meaningful only when one either (a) holds the method constant and varies the content, or (b) holds the constructs constant and varies the method. This is another reason why it is crucial to operationalize EI constructs via multiple methods. Moreover, it shifts the attention from measures to constructs (Matthews et al., 2004). Similarly, the need to include diversity in measurement also applies to the criterion side (see also Figure 15.1), because most studies on trait emotional intelligence are prone to common method variance (both predictors and criteria are measured with the same method, namely self-reports). We need studies that link the three intelligence constructs to objective measures of the various performance constructs.

Going Beyond Bivariate Relationships

In the broader field of personnel selection, researchers have gone beyond documenting simple bivariate relationships between individual difference predictor and job performance criterion to examine mediator and moderator relationships. Identifying mediators in the predictor-criterion relationship increases our understanding of the prediction and helps in the search for alternative predictors or design of interventions that influence individuals' scores on the criteria (by understanding what might affect the mediator). Similarly, research could attempt to explicate the precise affective, cognitive, motivational, and behavioral mechanisms that mediate the effects of practical, emotional, or social intelligence on the criterion, and directly measure and test these hypothesized mediation mechanisms. For example, cognitions and motivations (expectancy and instrumentality beliefs) or more subtle mediators (likeability) may mediate the intelligence effects on criteria such as job satisfaction and performance. For instance, to clarify the relationship between emotional intelligence and GPA, MacCann, Fogarty, Zeidner, and Roberts (2011)

found that emotional intelligence predicted achievement in school. That is, students who were higher on emotional intelligence used more effective strategies for coping with school-based stressors so that their achievement was less impeded by stress.

When an intelligence construct interacts with another predictor (e.g., personality trait) to affect the criterion, the interaction effect is mathematically equivalent whether we select intelligence or the other predictor as the moderator. However, conceptually, which predictor is selected as the moderator reflects different research questions. Identifying moderators that affect the magnitude and even nature of the relationship between the intelligence and criterion constructs is important, as the moderator effect clarifies the range and boundary conditions of the predictive validity of the intelligence construct. There has been increasing research examining moderator effects in the predictive validity of personality traits (e.g., Barrick, Parks, & Mount, 2005). In the domain of practical, emotional, and social intelligence, similar research on moderator effects has been conducted. For instance, Côté and Miners (2006) found that emotional intelligence was linked to task performance and organizational citizenship behavior (OCB) toward the organization only for people low on cognitive ability. Another example is Ferris et al. (2001), who reported that the relationship between social intelligence and job performance was stronger among workers who were high than low in cognitive ability. On the other hand, when the intelligence construct is the moderator affecting the relationship between another predictor and the criterion, the importance of the intelligence construct is demonstrated not in terms of its bivariate predictive validity of the criterion but in terms of its role in determining the range and boundary conditions of the bivariate predictive validity of another predictor. Several studies have demonstrated important moderator roles of practical, emotional, and social intelligence constructs. For example, Witt and Ferris (2003) found that the conscientiousness–performance relationship is moderated by social intelligence in that high levels of Conscientiousness together with poor social intelligence lead to lower performance. Chan (2006) found that proactive personality predicts work perceptions (procedural justice perception, perceived supervisor support, social integration) and work outcomes (job satisfaction, affective organizational commitment, job performance) positively among individuals with high practical intelligence (construed in terms of situational judgment effectiveness) but negatively among those with low practical intelligence. The findings on the disordinal interaction effects show that high levels of proactive personality may be either adaptive or maladaptive depending on the individual's level of practical intelligence, and they caution against direct interpretations of bivariate associations between proactive personality and work-relevant criteria. To encourage researchers to go beyond bivariate relationships, Côte (2014) presents various strategies that could be followed.

In short, fruitful future research could be conducted by adopting a strategy that goes beyond bivariate relationships to examine the mediators that link the intelligence construct to the criterion construct, the moderators that affect the nature of the intelligence-criterion relationship, and the role of the intelligence construct as a moderator affecting the nature of a predictor-criterion relationship.

Using Longitudinal Validation Designs

The time spans over which criteria are gathered for validation studies often reflect practical considerations. In predictive studies, the time period selected for the criterion rarely exceeds a year or two. Validation studies of practical intelligence, social intelligence, or emotional intelligence are no exception. As such, criterion-related validities reported for these three constructs may or may not accurately estimate the long-term validities associated with these constructs. That is, early performance may not reflect typical performance over an individual's tenure in an organizational or educational context, and if so, early validation efforts would provide misleading results.

In the personnel selection domain, research has shown that predictors of job performance might differ across job stages. Along these lines, the transitional job stage where there is a need to learn new things is typically contrasted to the more routine maintenance job stage (Murphy, 1989). For instance, Thoresen, Bradley, Bliese, and Thoresen (2004) found that Openness was

related to performance and performance trends in the transition stage but not to performance at the maintenance stage.

We believe that future studies on practical, social, and emotional intelligence should also adopt a longitudinal design where possible. Similar to personality, it might well be that the validity of these intelligence constructs differs in the long run for predicting job performance. For example, the transitional job stage typically involves more adaptive demands than the routine maintenance job stage. So, practical intelligence might predict job performance stronger in the transitional job stage than in the routine maintenance job stage.

A construct-oriented approach to the study of practical, emotional, and social intelligence that locates the constructs in the framework presented in Figure 15.1 would provide the conceptual basis to hypothesize, test, and interpret performance changes over time. Using appropriate longitudinal designs and change assessment techniques allows us to draw practical implications for key issues such as changes in test validities, changes in mean performance, changes in rank order of individuals' performance, and changes in dimensionality (i.e., number/nature of dimensions) of performance (Chan, 1998a, 2005a).

Adopting a Multilevel Perspective

In many contexts, personnel selection researchers have started to move beyond the individual level to consider variables at the higher levels (e.g., group, organization) of analysis. In the conceptual framework presented in Figure 15.1, the three intelligence constructs, as well as all of the other constructs in the individual difference and criterion spaces, could be conceptualized, measured, and analyzed in multiple levels of analysis (e.g., individual, group, organization).

So far, the research on practical, emotional, and social intelligence has not adopted a multilevel approach. With the increasing reliance on the use of teams to accomplish work in various organizations, the relevant job performance criteria are often at the higher level (e.g., team, organization) than the individual level of analysis (for an example in the field of personality, see Oh, Kim, & Van Iddekinge, 2015). When each of the three intelligence constructs is examined as predictors in the multilevel context of staffing teams or organizations and relating them to job performance at the individual, team, and organizational levels, we would need appropriate composition models (Chan, 1998b) that explicate the functional relationships linking the same intelligence constructs at the different levels of analysis so that we have clear conceptual understanding of what is meant by, say, team social intelligence and how to measure and analyze social intelligence at the team level. The multidimensional nature of the practical, emotional, and social intelligence constructs poses challenges to multilevel research because of the increased difficulty in formulating and testing appropriate composition models for these intelligence constructs.

Multilevel constructs and data bring with them complex conceptual, measurement, and data analysis issues, and discussion of these issues is beyond the scope of this chapter (for review, see Chan, 1998b, 2005b). Our basic point is that a multilevel approach is a strategy for future research on practical, emotional, and social intelligence that is not just desirable but probably necessary, given the inherently multilevel nature of the criteria of interest (e.g., team performance) that are emerging in personnel selection research.

EPILOGUE

We have, under the constraint of a relatively short chapter length, critically reviewed the vast literature on practical, emotional, and social intelligence constructs. We have proposed a conceptual framework, adapted from Chan and Schmitt (2005), that provides a way to organize the conceptualizations of the intelligence constructs and their relationships with other individual difference and criterion constructs. We believe that this framework also reconciles some, if not most, of the findings and debates in the literature on the intelligence constructs. Finally, by

explicating several strategies for future research, we hope that more scientifically rigorous studies could be conducted on practical, emotional, and social intelligence to provide practitioners in personnel selection and other HR functions with a more evidence-based basis for the use of these intelligence constructs and measures.

NOTE

1. Given space constraints we do not discuss physiological and neural measures (e.g., Raz, Dan, Arad, & Zysberg, 2013).

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