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Emotional Intelligence: An Integrative Meta-Analysis and Cascading Model

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Research and valid practice in emotional intelligence (EI) have been impeded by lack of theoretical clarity regarding (a) the relative roles of emotion perception, emotion understanding, and emotion regulation facets in explaining job performance; (b) conceptual redundancy of EI with cognitive intelligence and Big Five personality; and (c) application of the EI label to 2 distinct sets of constructs (i.e., ability-based EI and mixed-based EI). In the current article, the authors propose and then test a theoretical model that integrates these factors. They specify a progressive (cascading) pattern among ability-based EI facets, in which emotion perception must causally precede emotion understanding, which in turn precedes conscious emotion regulation and job performance. The sequential elements in this progressive model are believed to selectively reflect Conscientiousness, cognitive ability, and Neuroticism, respectively. "Mixed-based" measures of EI are expected to explain variance in job performance beyond cognitive ability and personality. The cascading model of EI is empirically confirmed via meta-analytic data, although relationships between ability-based EI and job performance are shown to be inconsistent (i.e., EI positively predicts performance for high emotional labor jobs and negatively predicts performance for low emotional labor jobs). Gender and race differences in EI are also meta-analyzed. Implications for linking the EI fad in personnel selection to established psychological theory are discussed.

Keywords: emotional intelligence, emotion regulation, job performance, personality, sex differences

During the last 20 years, emotional intelligence (EI) has become an increasingly popular topic within the fields of psychology and management (Grandey, 2000; Law, Wong, & Song, 2004; Mayer, Roberts, & Barsade, 2008). The impressive growth of EI in scholarly work (for a review, see Matthews, Zeidner, & Roberts, 2002) has been partially fueled by claims that EI is as strong a predictor of job performance as is IQ (Goleman, 1995). This purported relationship between EI and work performance has also stimulated interest among human resource practitioners, who have made EI a widely used tool for personnel hiring and training (Fineman, 2004). As evidence of this, a September 2008 count showed at least 57 consulting firms devoted principally to EI, 90 organizations that specialize in training or assessment of EI, 30 EI certification programs, and 5 EI "universities" (see www.eq.org).

Despite its commercial and academic expansion, many important questions about the theoretical bases of EI remain. These include issues of the respective roles of EI subfacets in the EI model (Mayer & Salovey, 1997), as well as connections of EI to more mainstream psychological theory on emotion regulation (Grandey, Fisk, & Steiner, 2005; Gross, 1998b) and individual differences (Law et al., 2004; McCrae, 2000).

Historically speaking, the study of social intelligence has a surprisingly lengthy and empirically disappointing record (Landy, 2005, 2006; Matthews et al., 2002). Although EI researchers tend to attribute the first mention of social intelligence to Thorndike (1920; Bar-On, 2000; Mayer & Geher, 1996; Mayer & Salovey, 1993), Dewey introduced the concept in 1909 (see Landy, 2006). After 50 years of research, Cronbach claimed that "social intelligence remains undefined and unmeasured" (1960, p. 319). Nearly 100 years following the first mention of social intelligence, evidence still seems weak (with a few notable exceptions; e.g., Olson-Buchanan et al., 1998). In regard to the latest incarnation of the social intelligence concept—"emotional intelligence"—critics remain dubious on the definition and measurement of EI and whether EI has incremental validity in organizational contexts beyond personality traits and cognitive ability (Landy, 2005; Locke, 2005; Murphy, 2006; cf. Van Rooy & Viswesvaran, 2004). Consequently, the current state of EI is somewhat paradoxical; although EI is a wildly popular tool in organizations, organizational science has yet to answer many theoretical, measurement, and validity questions surrounding the construct.

In order to begin addressing these issues, this paper makes five contributions to theory on EI and work behavior. First, we propose and test an original conceptual model of emotional intelligence (called the "cascading model") by laying out the theoretical causal mechanisms among EI subfacets (Salovey & Mayer, 1990), job performance, and other individual differences. This model highlights the extent to which emotion perception, emotion understand-

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ing, and emotion regulation fit a progressive structure, in which emotion perception causally precedes emotion understanding, which in turn gives rise to conscious emotion regulation and job performance. The cascading model also specifies the role of EI vis-à-vis relevant personality traits of Conscientiousness, Emotional Stability (Barrick, Mount, & Judge, 2001), and cognitive intelligence (F. L. Schmidt & Hunter, 2004); thus, it provides an integrative empirical test of social psychological and personality theory in the context of work organizations. Second, we distinguish three construct–method pairings that have dominated the empirical work on EI (labeled performance-based ability tests of EI, self-report ability tests of EI, and self-report mixed EI) to reveal that these alternative conceptualizations and operations of EI play three distinct roles in the emotional intelligence–work performance relationship. Third, we examine sex- and race-based subgroup differences in EI and how these differences vary substantially with the measure used. Fourth, in order to test our integrative model and estimate incremental validity and subgroup differences in EI, we conducted over a dozen original meta-analyses on the relationships among EI, Conscientiousness, Emotional Stability, cognitive ability, job performance, and demographics. We then combined these original meta-analyses with published meta-analytic effects to estimate the final model. Fifth, we coded the emotional labor content of the jobs included in our meta-analyses to assess whether emotional labor moderates the validity (and incremental validity) of EI. The empirical evidence validates our theoretical view that EI facets tend to have a causal ordering, EI tests can favor women, and EI is a better predictor of job performance in high emotional labor jobs; but the evidence also reveals that mixed-based EI is an empirically stronger (albeit theoretically weaker) predictor of job performance than is ability-based EI.

What Is EI? Ability Versus Mixed Models

Currently, there are two popular construct models available with which to define EI: (a) an ability model and (b) a mixed (traits with abilities) model (Mayer, Salovey, & Caruso, 2000). Ability models, originally conceptualized by Mayer et al. (2000), propose that EI is a type of intelligence or aptitude and therefore should overlap with cognitive ability. Ability models posit EI as "the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought" (Mayer et al., 2008, p. 511).

In contrast to ability models, mixed EI models do not classify EI as an intelligence but rather as a combination of intellect and various measures of personality and affect (Petrides & Furnham, 2001). For example, Bar-On's (1997) mixed model defines EI as "an array of noncognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (p. 14). Mixed model definitions of EI are the source of many EI criticisms because (a) they appear to define EI by exclusion as any desirable characteristic not represented by cognitive ability (Elfenbein, 2008; Locke, 2005; Matthews et al., 2002; Murphy, 2006; Zeidner, Matthews, & Roberts, 2004) and (b) they are too redundant with personality traits to justify a distinct construct (Conte, 2005; Daus & Ashkanasy, 2003; Van Rooy, Dilchert, Viswesvaran, & Ones, 2006). As a result, some have concluded that only ability EI models are worth studying (Daus & Ashkanasy, 2005) or at least that mixed models are profoundly flawed (through lack of empirical bases and overly broad conceptualization; Murphy, 2006).

In summary, there are two senses in which the term *emotional intelligence* has been used: (a) as a narrow, theoretically specified set of constructs pertaining to the recognition and control of personal emotion (called ability-based EI) and (b) as an umbrella term for a broad array of constructs that are connected only by their nonredundancy with cognitive intelligence (called mixed-based EI). Due to the lack of scientific rigor often associated with mixed-based models of EI, the current paper begins by developing a theoretical model of EI and job performance that focuses on the ability-based EI model.

A Cascading Model of EI

According to the ability-based model, EI can be broken down into four subdimensions: emotion perception, emotion understanding, emotion facilitation, and emotion regulation (Mayer & Salovey, 1997). We use this conceptualization of EI to propose a cascading model of EI, in which three of the four EI subdimensions are related to job performance in a sequential fashion, as shown in Figure 1. We note that the third dimension of EI, emotion facilitation, is not included in our cascading model of EI. The choice to exclude the emotion facilitation facet from our model was made a priori, due to its increasingly well-known conceptual redundancy with other EI dimensions and its lack of empirical support. Gignac (2005); Palmer, Gignac, Manocha, and Stough (2005); and Rossen, Kranzler, and Algina (2008) have demonstrated the poor fit of EI factor analytic models that included the dimension of emotion facilitation and the superior fit for EI models from which this dimension was removed. Poor construct validity evidence for the emotion facilitation facet is due in part to theoretical ambiguity over how emotion facilitation differs at its core from emotion regulation, the fourth dimension of EI. For example, Salovey and Mayer (1990) posit that emotion facilitation involves using emotion in a variety of contexts to facilitate the attainment of goals. For goal attainment, using emotion must essentially involve the induction of an emotion, such as the induction of a positive (e.g., joy) or negative (e.g., anger) emotion, which is conceptually redundant with regulating positive or negative emotion (Cole, Martin, & Dennis, 2004; Gross, 1998b). Due to this conceptual redundancy and because empirical research has shown a lack of construct validity for the emotion facilitation facet, our theoretical cascading model does not include this aspect of EI.

Emotion Regulation and Job Performance

In developing the cascading model of EI, we draw on theories of emotion, emotion regulation, and self-regulation (Gailliott, Mead, & Baumeister, 2008; Gross, 2008) in order to answer calls for a theoretical elaboration of EI and its purported relationship with job performance (Zeidner et al., 2004). In so doing, we focus on the role of emotion regulation as the key dimension of EI that influences job performance. Emotion regulation has been defined as "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998b, p. 275). Although emotions (e.g., surprise, joy, anger, sadness) can be distinguished from

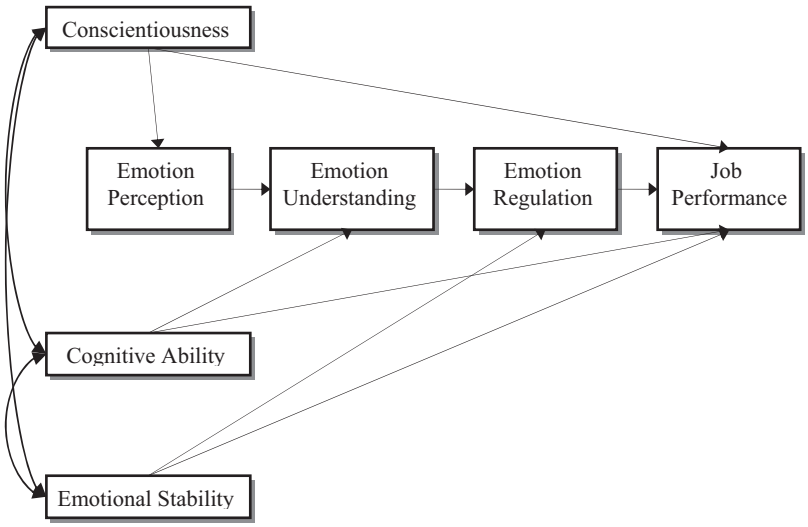

Figure 1. Cascading model of emotional intelligence (EI). The cascading model is based on the ability EI concept (Mayer & Salovey, 1997) and incorporates three subfacets of performance-based EI: emotion perception, emotion understanding, and emotion regulation.

moods (e.g., pleasant and unpleasant state affect)—in that emotions arise from a particular cause and correspond to specific action tendencies (e.g., escape, attack; Frijda, 1986; Lazarus, 1991)—in the current paper we consider both types of state affect to be subject to emotion regulation. Within an organizational setting, emotion regulation is theoretically related to job performance through the induction of affective states that are beneficial to job performance. That is, emotion regulation is the tool through which we create and maintain positive affective states, which have been suggested to benefit work behavior (George, 1991). In support of the advantages of positive affective states, Fredrickson's broaden-and-build theory (2001) proposes that positive emotions broaden behavioral repertoires, improve behavioral flexibility, and increase attentional scope, all of which may enhance job performance. Further developing the link between positive affective states and job performance, Tsai, Chen, and Liu (2007) have developed a model of the relationship between positive moods and job performance in which moods predict task performance indirectly through interpersonal processes (helping other coworkers and being helped by coworkers) and motivational processes (self-efficacy and task persistence). Initial evidence appears to support this model (Tsai et al., 2007), and previous work on the relationship between positive moods and task performance also suggests the two are positively related (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Erez & Isen, 2002; Hirt, Melton, McDonald, & Harackiewicz, 1996; Totterdell, 1999, 2000). Thus, we might expect that emotion regulation processes allow an individual to induce and sustain a positive affective state, which subsequently promotes helping behavior and motivation, and ultimately job performance.

Literature on emotion regulation involves not only the induction of moods but also the suppression of moods (Gross, 1998b). Emotion suppression involves inhibiting an emotion-expressive behavior (Gross, 1998a), and it is generally thought of as having negative consequences (Butler et al., 2003; Gross & John, 2003). Individuals with high ability to regulate emotion would likely less often engage in the strategy of suppression and instead engage in a more effective (i.e., less cognitively taxing) strategy, such as cognitive reappraisal (Butler et al., 2003). By so doing, individuals with high emotion regulation competence would retain more cognitive resources to devote to task performance. For all the reasons stated above, in our cascading model of EI we propose a positive relationship between the ability to regulate emotion and job performance.

> *Hypothesis 1:* Emotion regulation ability is positively related to job performance.

Although emotion regulation may enhance job performance through the management of affective states, we must address a prominent alternative theoretical viewpoint. Resource allocation theory (Kahneman, 1973; Kanfer & Ackerman, 1989; D. A. Norman & Bobrow, 1975) suggests there may actually be a negative relationship between emotion regulation and job performance, because emotion regulation demands our attentional resources and can draw attention from the task at hand (Beal, Weiss, Barros, & MacDermid, 2005). The work of Kanfer, Ackerman, and colleagues supports this idea with evidence that emotion regulation strategies have the strongest relationship with performance when attentional demands of the task are low (Kanfer & Ackerman, 1990, 1996; Kanfer, Ackerman, & Heggestad, 1996; i.e., when emotion regulation and job performance are not competing for resources). Similarly, self-regulation theory supports the idea that we have a finite resource pool (Baumeister, 2002; Muraven, Tice, & Baumeister, 1998; Vohs & Heatherton, 2000) from which emotion regulation draws. This makes subsequent regulation, including basic decision making (Vohs et al., 2008) and persistence (Baumeister, Bratslavsky, Muraven, & Tice, 1998), more difficult. Therefore, although our previous discussions have focused on the positive relationship between emotion regulation and job perfor-

mance, a limited-resource perspective alternatively proposes a negative relationship between the two.

The emotional labor literature has discussed the extent to which different emotion regulation processes "drain" resources. In particular, *surface acting*, or the modification of facial expression, requires more attention and effort than does *deep acting*, or the modification of inner feelings (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002; Côté, 2005; Diefendorff & Gosserand, 2003; Goldberg & Grandey, 2007; Grandey, 2003; Grandey et al., 2005). Surface acting also results in more stress than does deep acting (Beal, Trougakos, Weiss, & Green, 2006; Grandey, 2003; Grandey, Dickter, & Sin, 2004; Totterdell & Holmann, 2003). Thus, we would expect surface acting to elicit a greater drain on resources, which would also drain the resources available for job performance, than would deep acting. Emotion regulation literature has a similar taxonomy in antecedent-focused regulation and response-focused regulation, of which the former is proposed to be a greater drain on several types of resources (Gross, 1998a; Gross & John, 2003). In sum, it appears that the extent to which emotion regulation drains the resources available for job performance is dependent on the type of emotion regulation process employed.

With regard to Hypothesis 1, it is our belief that emotion regulation ability (a facet of EI) includes the ability to select emotion regulation strategies that are relatively less draining of personal resources. As such, implicit in Hypothesis 1 is the idea that individuals high in emotion regulation intelligence will match their chosen regulation strategy (surface vs. deep acting; antecedent- vs. response-focused) to the demands of the task and to the momentary store of personal resources at hand, so as to maintain overall job performance.

Perceiving and Understanding Emotions

Although we have focused on the ability to regulate emotion, we also propose that emotion regulation is preceded by two other dimensions of EI: the ability to perceive emotion and the ability to understand emotion (see Figure 1). To explain these relationships, we draw on Gross and Thompson's (2007) "modal" model of emotion, which proposes a sequence of events: a stimulus requires attention, then appraisal, and ultimately a response. Deriving from this basic model of emotion, our cascading model of EI is designed to capture the ability to complete each of these steps, in order, and thus is an attempt to align EI theory with more traditional theory of emotion.

The first step in models of emotion (Elfenbein, 2008; Gross & Thompson, 2007), attention, corresponds to the EI facet of ability to perceive emotion. As defined by Mayer and Salovey's (1997) ability model, emotion perception refers to "the ability to identify emotions in oneself and others, as well as in other stimuli, including voices, stories, music, and works of art" (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006, p. 781). We note that Mayer and Salovey's measure of EI taps only perception of emotion in others and not emotional self-perception. Data from self-report EI measures suggest there may be sizable overlap between the ability to perceive self-emotion and to perceive others' emotion (Joseph & Newman, in press; Wong & Law, 2002). Therefore, the current paper treats the ability to perceive emotion in the self and others as part of the same construct, emotion perception. Ekman and colleagues' research has shown there are considerable individual differences in the ability to perceive emotion (Ekman & O'Sullivan, 1991; Matsumoto et al., 2000). Recognizing that individual differences in emotion perception exist, we expect that individuals who are more aware of the verbal and nonverbal cues in their environments, as well as their own emotional states, subsequently have a larger base of emotional information. The accrual of a larger and more accurate base of emotional information then enables more accurate appraisal (i.e., Step 2 in basic models of emotion; Gross & Thompson, 2007) and more appropriate response formation (i.e., Step 3 in basic models of emotion). However, the reverse is not true; an individual who appraises and responds appropriately to emotion may not subsequently perceive emotion more accurately. Therefore, we place ability to perceive emotion as the first step in the cascading model of EI.

The second step of basic models of emotion (Elfenbein, 2008; Gross & Thompson, 2007), appraisal, is captured in the cascading model of EI by the ability to understand emotion. The ability to understand emotion entails understanding how emotions evolve over time, how emotions differ from each other, and which emotion is most appropriate for a given context (Mayer & Salovey, 1997). As such, the ability to understand emotion essentially refers to a set of knowledge structures involving the generic origins and consequences of emotional states. To place this definition in the context of general cognitive ability (as is appropriate, given our focus on the ability model of EI), our representation of the ability to understand emotion as knowledge about emotion is analogous to Humphreys'(1979) definition of cognitive ability as a individual's repertoire of knowledge and skills at any given point in time (cf. Jensen, 1994). That is, abilities such as the ability to understand emotion can be conceptualized as accumulated knowledge structures.

It is these knowledge structures that determine how an emotion is appraised. A large body of literature on the cognitive appraisal of emotion has helped clarify the dimensions on which we appraise emotion and the processes that we engage in during cognitive appraisal of emotion (Frijda 1986; Lazarus 1968, 1991; Roseman, 1979, 1984; C. A. Smith & Ellsworth, 1985). For example, Lazarus has proposed two appraisal processes: primary appraisal, which answers the question "Does this situation affect me personally?" and secondary appraisal, which answers the question "What if anything can be done about this situation?" (Lazarus & Folkman, 1984, p. 31). How an individual answers these questions reflects his or her emotion understanding. Models of knowledge activation (Kintsch, 2000) show that attention, or in this case, emotion perception, can activate relevant knowledge structures, and the extent to which these knowledge structures are accurate embodies the ability to understand emotion. For example, an individual may have an inaccurate schema of anger as inflexible. Thus, when this person perceives anger, and subsequently engages in appraisal, his or her answer to the question "What if anything can be done about this situation?" will be driven by the understanding of anger as fixed and uncontrollable. This simple example illustrates how the ability to understand emotion is affected by our ability to accurately perceive emotion and in turn influences how we can respond to/regulate that emotion.

As such, emotion understanding is expected to mediate the relationship between emotion perception and emotion regulation abilities (cf. James, Mulaik, & Brett, 2006). But is this full or partial mediation? It is possible to imagine contexts in which the

relationship between emotion perception and one's ability to regulate emotion does not rely on accurate emotion understanding (e.g., the perception of fear can lead to automatic down-regulation of fear, even without knowledge of how the fear developed or of the nature of the fear itself). That is, emotion perception can directly affect emotion regulation if this process occurs automatically or without voluntary control.

However, Mayer and Salovey defined the concept of emotion regulation as the "*conscious* [emphasis added] regulation of emotions to enhance emotional and intellectual growth" (1997, p. 14). This suggests that unconscious regulation similar to that of the automatic down-regulation of fear should not be included in the cascading model of EI. The exclusion of unconscious emotion regulation is consistent with the literature on general self-regulation abilities, which separates effortful or conscious self-regulation from automatic or unconscious self-regulation due to their distinct neurological origins, antecedents, and outcomes (for a review, see Eisenberg, Smith, Sadovsky, & Spinrad, 2004). Because EI was originally conceptualized as a model of conscious regulation (Mayer & Salovey, 1997) and self-regulation theories suggest that voluntary and involuntary emotion regulation are dissimilar enough not to be described with one model, our cascading model focuses solely on conscious processes. Therefore, the automatic processes that allow the perception of emotion to directly influence the regulation of emotion are not included in the cascading model. As a result, we expect the ability to understand emotion to completely mediate the relationship between the ability to perceive emotion and the ability to regulate emotion, because we are dealing with a conscious emotion regulation process.

As an analogy, the EI cascading model is similar to a skill development model by which schoolchildren learn responsive writing skills. That is, children first learn to read words, then learn reading comprehension, and finally develop the capability for responsive writing. Similarly, emotion perception ability provides an opportunity to develop emotion understanding, which in turn provides an opportunity for the development of emotion regulation skill. According to this perspective, emotion understanding is an essential intermediate step.

> *Hypothesis 2:* Emotion understanding will fully mediate the effect of emotion perception on emotion regulation.

In summary, we have drawn on theory of emotion, emotion regulation, and self-regulation in order to develop the cascading model of EI, shown in Figure 1. We place particular importance on the pattern of relationships among emotion perception, emotion understanding, and emotion regulation, with emotion regulation specified as the final step in enhancing job performance through emotional competence. The ability to regulate emotion is preceded by the ability to understand emotion and perceive emotion.

Incorporating Personality and Cognitive Ability Into the Cascading Model

Having presented a causal rationale for the relationships between EI facets and job performance, we now acknowledge other important constructs with which EI might potentially overlap in the explanation of performance: personality traits and cognitive ability. Cognitive ability robustly contributes to job performance, due to its connection with accrued job knowledge and skills (Hunter & Hunter, 1984; F. L. Schmidt, Hunter, & Outerbridge, 1986). Strong performance in most jobs also requires the individual to be responsible and achievement driven (Conscientious) as well as low in anxiety, insecurity, and depression (Emotionally Stable; Barrick & Mount, 2000).

According to Barrick, Mitchell, and Stewart's (2003) full motivational mediator model, the personality traits of Conscientiousness and Emotional Stability are the only two Big Five traits that universally predict overall job performance. The reasoning is that these two traits uniquely give rise to a motivational mediator labeled *accomplishment strivings*, which is a midlevel goal structure (Emmons, 1989) implicated in task-oriented behavior. Prior empirical research has been consistent with this viewpoint (see review of findings on Conscientiousness and Emotional Stability by Hogan & Holland, 2003). Thus both theoretical and empirical evidence pinpoint the unique connections of these two Big Five traits with job performance. Our conceptual model of EI (see Figure 1) does not incorporate other personality traits (e.g., Extraversion, Agreeableness), as these traits have no theoretical connection with overall job performance (Barrick & Mount, 2000); thus, their inclusion is unnecessary for a fully specified structural model. We nevertheless continue to include all five of the Big Five traits in our regression-based estimation of operational incremental validity, presented later.

We propose here that the dimensions of EI may serve as partial mechanisms by which cognitive ability and the personality traits of Conscientiousness and Emotional Stability influence job performance. Conscientious individuals have been described as thorough, organized, methodical, cautious, and careful (McCrae & Costa, 1992) and have been shown to pay much greater attention to detail (Nigg et al., 2002). Although these adjectives describe Conscientiousness as a behaviorally oriented trait, Conscientiousness has been described as an emotionally oriented trait as well. Conscientious individuals have shown above-average levels of interpersonal functioning (Jensen-Campbell & Malcolm, 2007) and increased capacity for self-conscious emotions (Tracy & Robins, 2004), such as guilt and shame (Abe, 2003; Einstein & Lanning, 1998). It has been suggested that the impulse control facet of Conscientiousness relies on the experience of guilt and shame to guide socially appropriate behavior (Roberts, Jackson, Fayard, Edmonds, & Meints, in press). Thus, conscientious individuals may develop a heightened perception of self-conscious emotions as a sort of radar to detect when they have lost control of their behavior. We therefore expect Conscientiousness to be positively related to emotion perception in the self. In a similar manner, conscientious individuals may use the emotional cues from others to guide their need for controlled behavior. That is, a conscientious person would likely develop the ability to read emotional cues in his or her environment in order to determine when a behavior is appropriate or inappropriate (Matsumoto et al., 2000). Given these theoretical links between Conscientiousness and emotion perception in the self and others, we expect Conscientiousness to be positively related to emotion perception ability.

> *Hypothesis 3:* Conscientiousness is positively related to emotion perception ability.

In addition, we propose that the relationship between cognitive ability and performance involves the EI dimension of emotion understanding. We endorse two definitions of cognitive ability: (a) Humphreys' (1979, p. 106) definition of cognitive ability as an individual's "entire repertoire of acquired skills, knowledge, learning sets, and generalization tendencies considered intellectual in nature that is available at any one period of time" and (b) Ackerman's (1996) conceptualization of intelligence (i.e., intelligence-as-process, personality, interests, and intelligence-as-knowledge). Both definitions recognize that knowledge is a component of cognitive ability. Moreover, it has been shown that the knowledge-related component of cognitive ability is the primary avenue by which cognitive ability influences job performance (F. L. Schmidt & Hunter, 2004). That is, individuals with higher cognitive ability acquire more job-related knowledge, which increases job performance. As previously mentioned, the ability to understand emotion represents a body of knowledge concerning which emotions are appropriate in a given context (Mayer & Salovey, 1997). Thus, we propose that individuals with high cognitive ability would acquire a stronger knowledge base associated with understanding one's emotions. Empirical support for this hypothesis has been demonstrated in the domain of emotion knowledge, where verbal ability has been related to children's understanding of emotion (Fine, Izard, & Trentacosta, 2006).

Hypothesis 4: Cognitive ability is positively related to emotion-understanding ability.

Finally, we propose that Emotional Stability is a disposition underlying the EI dimension of emotion regulation. Emotional Stability has been described as a lack of emotionality (W. T. Norman, 1963), Neuroticism (Eysenck, 1970), and anxiety (Cattell, 1957). A large body of work has demonstrated that neurotic individuals experience higher levels of trait negative affect (Gross, Sutton, & Ketelaar, 1998) and hyperreactivity to daily stressors in the form of negative mood states even after controlling for prior mood (Marco & Suls, 1993; Suls, Green, & Hillis, 1998). Neurotic individuals also show more frequent use of emotion-focused coping, or coping focused at regulating emotional reactions (Connor-Smith & Flachsbart, 2007; Shewchuk, Elliott, MacNair-Semands, & Harkins, 1999). These empirical findings present an interesting paradox: Even though neurotic individuals attempt to regulate their affect more frequently than do emotionally stable individuals, they report tonically high levels of negative affect. This leads us to ask why neurotic individuals' frequent attempts to regulate emotion fail. We believe that neurotic individuals lack the ability to regulate emotion effectively. To put it differently, we propose that neurotic individuals are using ineffective emotion regulation strategies. For example, neurotic individuals may be engaging in surface acting, or the modification of facial expression (Grandey, 2003), which does not modify the inner emotional state or eliminate a negative mood. Recent work supports our suspicion that neurotic individuals do not engage in effective emotion regulation strategies (i.e., reappraisal) as often as emotionally stable individuals do (Gross & John, 2003). Thus, we expect Emotional Stability to be positively related to the ability to regulate emotion.

Hypothesis 5: Emotional Stability is positively related to emotion regulation ability.

In sum, the cascading model of EI (see Figure 1) presents emotion perception, emotion understanding, and emotion regulation as partial mediators of the effects of Conscientiousness, cognitive ability, and Emotional Stability on performance, respectively.

Convergent, Discriminant, and Incremental Validity of Various EIs

The cascading model of EI (see Figure 1) incorporates our fundamental theoretical ideas and predictions about EI dimensions, job performance, cognitive ability, and personality. As previously mentioned, Figure 1 is based upon an ability model of EI (Daus, 2006; Mayer et al., 2000).

At this point, we recognize that mixed models of EI, despite their criticisms, are very common in the science and practice of EI. This alternative formulation (i.e., mixed EI) involves inclusive, compound conceptualizations of EI that combine the EI competencies reviewed above with many other tendencies, such as motivation (e.g., need for achievement), social styles (e.g., assertiveness), self-esteem, impulse control (Mayer et al., 2008), and a "grab bag" of other concepts that are only loosely connected. Due to the popularity of measures based on mixed models of EI and the broad array of constructs they assess, we feel it is necessary to compare these models to the more narrowly defined ability models in an attempt to assess whether it is appropriate to label both of these models as models of emotional intelligence.

In order to compare the EI literatures regarding ability and mixed EI models, we first point out a construct–method distinction (Arthur & Villado, 2008). That is, ability and mixed models of EI can each be measured via self-report or via performance-based tests (e.g., multiple-choice measures where answers are scored as correct or incorrect). Previous meta-analytic work (Van Rooy, Viswesvaran, & Pluta, 2005) has not distinguished the construct (ability vs. mixed EI) from the method (self-report vs. performance-based). That is, Van Rooy et al. coded all self-report measures as mixed EI and all performance-based measures as ability EI—despite the fact that some self-report measures are based on the ability EI model (e.g., the Wong and Law Emotional Intelligence Scale; Wong & Law, 2002). The current study draws distinctions among the various construct–method pairings of EI by crossing the construct distinction (ability vs. mixed) with the method distinction (self-report vs. performance-based). This results in three distinct construct–method pairings of EI: performance-based ability EI, self-report ability EI, and self-report mixed EI (for the fourth construct–method pairing, performance-based mixed EI, no measures currently exist). Given these construct–method pairings, we can now investigate the discriminant, convergent, and incremental validity of ability and mixed models of EI.

Discriminant, Convergent, and Incremental Validity of EI Construct–Method Pairings

Ability models of EI conceptualize EI as an intelligence, and mixed models define EI as a combination of intelligence, person-

ality, and affect (Mayer et al. 2000). Although many of the underlying premises of the ability and mixed models may be similar (Ciarrochi, Chan, & Caputi, 2000), empirical evidence suggests "they [ability and mixed EI models] diverge more than they converge ($\hat{\rho}_{ability,mixed} = .24$), indicating that two different constructs are being tapped" (Van Rooy, Viswesvaran, & Pluta, 2005, p. 453). If ability EI and mixed EI are in fact distinct constructs, we would expect to find evidence for discriminant validity, or evidence showing these constructs are less-than-perfectly related (Campbell & Fiske, 1959).

Convergent validity, in contrast, exists when two measures of the same construct are strongly related (Campbell & Fiske, 1959). Given the construct–method pairings of EI, we expect to find evidence of convergent validity between self-report measures of ability EI and performance-based measures of ability EI because they are both assessing the same construct (ability EI). That is, self-reports of ability EI should show a strong relationship with performance-based measures of ability EI.

Finally, because we expect a strong relationship between measures of the same construct and a weak relationship between measures of different constructs, we can make predictions regarding the incremental validity of these measures over each other. In theory, measures of the same construct should overlap and thus should capture no additional variance over each other in the prediction of relevant outcomes. We therefore suspect that self-report ability EI measures and performance-based ability EI measures will exhibit little (if any) incremental validity over each other in predicting job performance. In contrast, we should find that mixed EI and ability EI measures exhibit significant incremental validity over each other in the prediction of job performance.

Hypothesis 6: EI construct–method pairings will exhibit evidence of (a) convergent validity (strong relationship of self-report ability EI with performance-based ability EI), (b) discriminant validity (weak relationship of ability EI with mixed EI), and (c) incremental validity (of ability EI and mixed EI over each other) in predicting job performance.

Incremental Validity

Aside from the conceptual models of EI and job performance presented above, there exists another important question from a practitioner perspective: "How large is the incremental validity of EI for predicting job performance, over and above cognitive ability and personality?" We answer this question by examining the incremental validity of the three construct–method EI pairings. Because ability measures of EI are based on a conceptualization of EI as an intelligence (Mayer et al., 2000), it is expected that these measures will show a strong relationship with cognitive ability. As such, we do not expect ability measures of EI to exhibit meaningful incremental validity over cognitive ability. However, it is expected that ability measures of EI will exhibit significant incremental validity over Big Five personality traits, because the five-factor model of personality does not include elements of ability.

Hypothesis 7: Measures of ability EI (self-report and performance-based) will exhibit significant incremental validity over measures of Big Five personality.

In contrast, measures of mixed EI are based on a definition of EI that emphasizes aspects of personality, intelligence, and affect (Mayer & Salovey, 1997; Petrides & Furnham, 2001). Given this definition, we expect measures of mixed EI to overlap somewhat with Big Five personality and cognitive ability measures in their prediction of job performance. However, because measures of mixed EI include not only content related to personality and intelligence but also content covering a host of other individual differences, including affect, self-efficacy, and motivation (e.g., Schutte et al., 1998), mixed measures are expected to contribute significant unique variance to the prediction of job performance. This hypothesis contrasts with previous authors' suggestions of very little (if any) incremental validity of mixed EI over well-established personality and ability constructs (e.g., Landy, 2005).

Hypothesis 8: Measures of mixed EI will exhibit incremental validity over cognitive ability and Big Five personality.

Subgroup Differences

In addition to concerns regarding the questionable incremental validity of EI, concerns also exist regarding subgroup differences on EI (Conte & Dean, 2006). For example, there is a growing tendency among EI researchers to conclude that women score higher than men on measures of emotional intelligence (Van Rooy et al., 2006). Our own explanation for this finding stems from the large body of literature on sex differences in emotion. In particular, women have been shown to be better at perceiving nonverbal emotion cues (Hall, 1978, 1984; McClure, 2000) and to have more complex emotion knowledge (Ciarrochi, Hynes, & Crittenden, 2005), which could contribute to higher EI scores in women. Differences in female–male EI can also be explained through the extreme male brain theory of autism (Baron-Cohen, 2002), which suggests that men tend to "systemize" (i.e., to analyze the world in a series of "if-then" rules) more than women and that women tend to "empathize" (i.e., to attribute mental states to others and respond with appropriate affective responses) more than men. This explanation points to differences in female and male cognition, with women using emotion more often and more appropriately than do men. Ultimately, we would expect these sex differences to result in higher EI scores for women.

Hypothesis 9: Women will score higher on EI measures than will men.

Regarding race differences, previous work suggests near-zero racial subgroup differences (Van Rooy, Alonso, & Viswesvaran, 2005) in measures of EI. However, because we have no theoretical reason to expect race differences on measures of EI, we investigate race differences in an exploratory manner in the current paper.

Method

In order to test the cascading model of EI, we constructed a correlation matrix based on meta-analytic estimates (as recommended by Viswesvaran & Ones, 1995). These estimates include 21 published meta-analytic correlations plus 66 original meta-analyses (see Tables 1, 2, and 6). Existing correlation estimates (see Table 3) based on the 21 published meta-analyses were corrected for attenuation in the predictor and criterion. Correla-

Table 1
Meta-Analytic Results for Performance-Based Ability Emotional Intelligence Dimensions With Personality Traits, Cognitive Ability, and Job Performance

						95% CI		80% CI		
	k	*N*	*r*	$\hat{\rho}$	*SD* ρ	*LL*	*UL*	*LL*	*UL*	% variance
Conscientiousness										
Emotion perception	23	3,582	.25	.28	.34	.13	.38	−.16	.71	6
Emotion understanding	22	3,374	.07	.09	.10	.02	.12	−.04	.21	51
Emotion facilitation	23	3,582	.09	.11	.11	.04	.14	−.02	.24	48
Emotion regulation	22	3,374	.13	.16	.09	.08	.18	.04	.28	53
Emotional Stability										
Emotion perception	24	3,696	.11	.12	.02	.07	.14	.10	.14	94
Emotion understanding	22	3,374	.08	.09	.08	.03	.12	−.01	.19	63
Emotion facilitation	23	3,582	.09	.11	.03	.05	.13	.07	.15	88
Emotion regulation	22	3,374	.14	.17	.16	.07	.20	−.04	.38	27
Agreeableness										
Emotion perception	23	3,582	.13	.15	.07	.09	.17	.06	.24	64
Emotion understanding	22	3,374	.09	.12	.04	.05	.13	.06	.17	84
Emotion facilitation	23	3,582	.13	.17	.02	.10	.16	.13	.20	91
Emotion regulation	22	3,374	.23	.30	.03	.19	.27	.26	.34	75
Extraversion										
Emotion perception	24	3,696	.08	.09	.04	.04	.11	.03	.14	82
Emotion understanding	22	3,374	.06	.07	.11	.01	.11	−.07	.22	45
Emotion facilitation	23	3,582	.08	.10	.06	.04	.12	.02	.18	70
Emotion regulation	22	3,374	.14	.18	.09	.10	.19	.06	.29	53
Openness										
Emotion perception	23	3,582	.06	.07	.10	.01	.11	−.05	.20	49
Emotion understanding	22	3,374	.14	.18	.14	.07	.19	.00	.36	36
Emotion facilitation	23	3,582	.08	.10	.14	.02	.13	−.08	.27	37
Emotion regulation	22	3,374	.12	.16	.13	.07	.18	−.01	.33	37
Cognitive ability										
Emotion perception	21	4,710	.09	.10	.05	.05	.12	.04	.16	72
Emotion understanding	20	4,581	.31	.39	.15	.25	.37	.20	.58	17
Emotion facilitation	18	3,971	.15	.18	.15	.08	.21	−.01	.36	22
Emotion regulation	19	4,277	.13	.16	.06	.09	.17	.09	.24	59
Job performance*										
Emotion perception	8	562	.08	.10	.01	−.02	.18	−.02	.22	67
High emotional labor	4	220	.18	.21	.00	.06	.29	.21	.21	100
Low emotional labor	3	223	.01	.01	.01	−.14	.16	−.09	.11	76
Emotion understanding	8	562	.13	.15	.01	.03	.23	.02	.28	67
High emotional labor	4	220	.19	.22	.00	.08	.29	.22	.22	100
Low emotional labor	3	223	.02	.02	.00	−.10	.15	.02	.02	100
Emotion facilitation	8	562	.05	.07	.00	−.04	.14	.07	.07	86
High emotional labor	4	220	.10	.12	.00	.00	.21	.12	.12	100
Low emotional labor	3	223	−.04	−.04	.00	−.13	.05	−.04	−.04	100
Emotion regulation	8	562	.15	.18	.02	.03	.27	−.01	.38	45
High emotional labor	4	220	.22	.26	.03	.03	.41	.04	.48	44
Low emotional labor	3	223	.01	.01	.00	−.04	.06	.01	.01	100

Note. * Emotional labor is a moderator of the emotional intelligence-job performance relationships; *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; *r* = sample-size weighted mean correlation; $\hat{\rho}$ = correlation corrected for attenuation and range restriction; *SD* ρ = standard deviation of corrected correlation; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; % variance = percent of variance accounted for by sampling error.

tions with job performance were also corrected for direct range restriction (Sackett & Yang, 2000; Thorndike, 1949).

In correcting for range restriction in the observed EI validities, we used the unrestricted standard deviations reported in EI inventory manuals (cf. Salgado, 1997). When this method was used, the sample-weighted average ratio of restricted to unrestricted standard deviation was .99 for performance-based EI and .83 for self-reported EI. To correct Big Five personality validities for range restriction, we used a .92 standard deviation ratio (Hurtz & Donovan, 2000, p. 873). Cognitive ability validities were corrected for range restriction by using the average standard deviation ratio of .67 (Hunter & Hunter, 1984; Hunter, Schmidt, & Le, 2006, p. 601).

The minimum sample size for personality intercorrelations is 135,529 (Ones, 1993), and the minimum *N* for correlations between personality factors and cognitive ability is 11,190 (Judge, Jackson, Shaw, Scott, & Rich, 2007). Job performance validities come from Hunter and Hunter (1984; *N* = 32,124, for cognitive tests) and from an updated version of Hurtz and Donovan (2000; minimum *N* = 7,797 for Big Five personality inventories). That is, we updated Hurtz and Donovan's (2000) meta-analyses of Big Five personality traits and job performance through 2008.

Table 2
Meta-Analytic Results for Construct–Method Pairings of Emotional Intelligence, Big Five Personality Traits, Cognitive Ability, and Job Performance

						95% CI		80% CI		
	k	*N*	*r*	$\hat{\rho}$	*SD* ρ	*LL*	*UL*	*LL*	*UL*	% variance
Conscientiousness	60	18,462	.28	.32	.17	.24	.32	.11	.54	11
Self-report mixed EI	31	5,591	.33	.38	.17	.27	.39	.16	.60	16
Self-report ability EI	27	8,566	.32	.38	.10	.28	.36	.26	.51	23
Performance-based EI	21	4,155	.12	.13	.10	.07	.16	.00	.26	39
Emotional Stability	60	18,416	.33	.39	.24	.28	.38	.08	.69	6
Self-report mixed EI	30	5,386	.45	.53	.22	.38	.53	.25	.81	8
Self-report ability EI	26	8,479	.34	.40	.14	.28	.39	.22	.59	13
Performance-based EI	22	4,401	.17	.20	.26	.08	.27	−.13	.54	9
Agreeableness	59	18,302	.28	.34	.16	.25	.32	.14	.54	13
Self-report mixed EI	30	5,386	.36	.43	.13	.31	.41	.27	.59	21
Self-report ability EI	26	8,479	.26	.31	.13	.21	.30	.14	.48	17
Performance-based EI	23	4,287	.25	.29	.15	.18	.31	.09	.48	22
Extraversion	60	18,450	.28	.33	.27	.22	.34	−.01	.67	5
Self-report mixed EI	30	5,552	.40	.46	.13	.35	.45	.29	.63	18
Self-report ability EI	26	8,479	.27	.32	.28	.18	.37	−.04	.69	5
Performance-based EI	23	4,269	.15	.18	.26	.05	.24	−.15	.51	9
Openness	58	18,170	.23	.27	.20	.19	.28	.02	.53	10
Self-report mixed EI	30	5,386	.26	.29	.20	.19	.32	.04	.55	15
Self-report ability EI	26	8,479	.24	.29	.19	.18	.31	.05	.54	10
Performance-based EI	21	4,155	.18	.21	.18	.11	.25	−.01	.44	18
Cognitive ability	54	10,519	.13	.16	.18	.09	.17	−.07	.39	21
Self-report mixed EI	19	2,880	.09	.11	.17	.03	.15	−.10	.33	26
Self-report ability EI	16	2,158	.00	.00	.08	−.05	.05	−.11	.10	56
Performance-based EI	28	5,538	.22	.25	.13	.17	.27	.08	.42	28
Job performance	22	2,593	.24	.32	.04	.16	.31	.08	.56	23
Self-report mixed EI	9	1,110	.32	.47	.00	.25	.39	.47	.47	51
High emotional labor	4	270	.37	.59	.01	.25	.48	.46	.72	72
Low emotional labor	3	300	.27	.43	.00	.18	.35	.43	.43	100
Self-report ability EI	7	835	.17	.23	.00	.10	.25	.15	.31	73
High emotional labor	7	516	.20	.28	.02	.10	.35	.09	.47	41
Low emotional labor	4	390	.14	.20	.00	.002	.05	.20	.20	100
Performance-based EI	10	887	.16	.18	.01	.08	.24	.06	.30	61
High emotional labor	4	220	.22	.24	.00	.13	.31	.24	.24	100
Low emotional labor	3	223	.00	.01	.00	−.12	.14	.01	.01	100

Note. *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; *r* = sample-size weighted mean correlation; $\hat{\rho}$ = correlation corrected for attenuation and range restriction; *SD* ρ = standard deviation of corrected correlation; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; % variance = percent of variance accounted for by sampling error.

To update the meta-analyses of Big Five validities, we obtained studies from the reference list of Hurtz and Donovan (2000). Of the 26 studies included in Hurtz and Donovan's original meta-analysis, four could not be located. All of the studies that could not be located were conference papers for which the corresponding author did not respond to a request for the paper. Of the 22 studies that could be located, four were removed from the analysis because the authors used training performance as the criterion rather than job performance, which is the focus of the current paper (in all, the remaining 18 studies yielded $k = 35$ independent samples).

To update this collection of studies, a keyword search in PsycINFO (1887-1008), Google Scholar, and Dissertation Abstracts International (1861–2008) was conducted for keywords *personality, Big Five personality, five factor model, job performance*, and several variations of these keywords for the years between 1996 [the last year of studies included in the original Hurtz and Donovan (2000) meta-analysis] and 2008. The keyword search found 675 articles, which were each coded for the following inclusion criteria: (a) the study examined actual workers; (b) the study measured personality with an inventory designed to assess Big Five personality traits (personality measures included Hogan Personality Inventory, Goldberg's Big 5 markers, NEO (PI/PI–R/FFI), 16PF, Global Personality Inventory, and Personal Characteristics Inventory); (c) the study reported enough information to calculate a correlation between at least one Big Five personality trait and job performance; and (d) the study used supervisor ratings of job performance. As a result of the inclusion criteria, 33 independent samples were added to the original collection of studies reported in Hurtz and Donovan (2000), for a final collection of 68 independent samples.

Original Meta-Analyses

We conducted several original meta-analyses to estimate the correlations involving emotional intelligence. To identify studies for inclusion, we conducted searches of the American Psychological Association's PsycINFO (1887–2008), Google Scholar, and

Table 3
Meta-Analytic Correlation Matrix of Emotional Intelligence (EI), Performance, Personality, Cognitive Ability, and Emotional Labor

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Performance-based ability EI	—												
2. Emotion perception	.76[a]	—											
	13/2,679												
3. Emotion understanding	.82[a]	.46[a]	—										
	13/2,679	13/2,679											
4. Emotion facilitation	.87[a]	.63[a]	.62[a]	—									
	13/2,679	13/2,679	13/2,679										
5. Emotion regulation	.76[a]	.34[a]	.55[a]	.53[a]	—								
	13/2,679	13/2,679	13/2,679	13/2,679									
6. Self-report ability EI	.12[a]	.09[a]	.10[a]	.25[a]	.37[a]	—							
	14/2,426	6/969	6/969	6/969	6/969								
7. Self-report mixed EI	.26[a]	.14[a]	.17[a]	.19[a]	.33[a]	.59[a]	—						
	10/1,572	10/1,572	10/1,572	10/1,572	10/1,572	9/2,945							
8. Conscientiousness	.13[a]	.28[a]	.09[a]	.11[a]	.16[a]	.38[a]	.38[a]	—					
	21/4,155	23/3,582	22/3,374	23/3,582	22/3,374	27/8,566	31/5,591						
9. Emotional Stability	.20[a]	.12[a]	.09[a]	.11[a]	.17[a]	.40[a]	.53[a]	.26[b]	—				
	22/4,401	24/3,696	22/3,374	23/3,582	22/3,374	26/8,479	30/5,386	587/490,296					
10. Agreeableness	.29[a]	.15[a]	.12[a]	.17[a]	.30[a]	.31[a]	.43[a]	.27[b]	.25[b]	—			
	23/4,287	23/3,582	22/3,374	23/3,582	22/3,374	26/8,479	30/5,386	344/162,975	561/415,679				
11. Extraversion	.18[a]	.09[a]	.07[a]	.10[a]	.18[a]	.32[a]	.46[a]	.00[b]	.19[b]	.17[b]	—		
	23/4,269	24/3,696	22/3,374	23/3,582	22/3,374	26/8,479	30/5,552	632/683,001	710/440,440	234/135,529			
12. Openness	.21[a]	.07[a]	.18[a]	.10[a]	.16[a]	.29[a]	.29[a]	−.06[b]	.16[b]	.11[b]	.17[b]	—	
	21/4,155	23/3,582	22/3,374	23/3,582	22/3,374	26/8,479	30/5,386	338/356,680	423/254,937	236/144,205	418/252,004		
13. Cognitive ability	.25[a]	.10[a]	.39[a]	.18[a]	.16[a]	.00[a]	.11[a]	−.04[c]	.09[c]	.00[c]	.02[c]	.22[c]	—
	28/5,538	21/4,710	20/4,581	18/3,971	19/4,277	16/2,158	19/2,880	56/15,429	61/21,404	38/11,190	61/21,602	46/13,182	
14. Job performance	.18[a]	.10[a]	.15[a]	.07[a]	.18[a]	.23[a]	.47[a]	.21[d]	.11[d]	.07[d]	.09[d]	.06[d]	.44[e]
	10/887	8/562	8/562	8/562	8/562	7/835	9/1,110	64/12,434	53/9,184	56/9,702	56/9,664	48/7,797	425/32,124
High emotional labor	.24[a]	.21[a]	.22[a]	.12[a]	.26[a]	.28[a]	.59[a]	.20[a]	.10[a]	.09[a]	.09[a]	.10[a]	.37[a]
	4/220	4/220	4/220	4/220	4/220	7/516	4/270	31/4,673	26/3,846	28/4,172	29/4,364	21/3,225	122/4,454
Low emotional labor	.01[a]	.01[a]	.02[a]	−.04[a]	.01[a]	.20[a]	.43[a]	.26[a]	.15[a]	.12[a]	.10[a]	.04[a]	.39[a]
	3/223	3/223	3/223	3/223	3/223	4/390	3/300	26/4,967	21/3,638	23/3,935	22/3,705	21/2,872	361/30,160

Note. Each cell contains the correlation corrected for attenuation in the predictor and criterion, as well as range restriction, followed by *k* number of effect sizes and *N* sample size.
[a] Original meta-analysis. [b] Ones (1993). [c] Judge et al. (2007). [d] Hurtz & Donovan, 2000 (updated through 2008), for Big Five correlations with job performance (uncorrected *r*, *SD* ρ [95% CI]) = Conscientiousness, .15, .01 [.13, .18]; Emotional Stability, .08, .00 [.06, .10]; Agreeableness, .05, .02 [.02, .08]; Extraversion, .06, .01 [.04, .09]; Openness, .04, .01 [.01,.07]. [e] Hunter & Hunter (1984; uncorrected $r = .26$).

Dissertation Abstracts International (1861–2008) for the following keywords (and several variations thereof): *emotional intelligence, cognitive ability, personality, job performance, race,* and *sex.* Studies used in meta-analyses by Van Rooy and colleagues (Van Rooy & Viswesvaran, 2004; Van Rooy, Viswesvaran, & Pluta, 2005) were also obtained from their reference lists. References of all available studies and relevant reviews were searched for studies that were missed in previous searches, and several authors were contacted for unpublished work relating to emotional intelligence. This search identified 171 studies that were then examined for congruence with several inclusion criteria. Following Van Rooy and Viswesvaran (2004), a study was included only if it used a measure that was specifically referred to as a measure of emotional intelligence. The remaining studies were then examined for relationships with job performance, cognitive ability, and personality and intercorrelations of EI measures and EI subdimensions.

When collecting estimates of the relationship between EI and job performance, we invoked especially high standards for what would count as job performance. Although this decision yields smaller meta-analytic sample sizes, it provides higher quality data for drawing inferences to EI personnel selection scenarios. Studies of the relationship between EI and job performance were included if (a) enough information to calculate a correlation between EI and job performance was provided, (b) ratings of job performance were provided by a supervisor (not self-reported), and (c) the study involved employed individuals (this does not include students acting as if they were managers who provide performance ratings of students acting as subordinates; e.g., Day & Carroll, 2004). Studies were also excluded if (a) job performance was manipulated or (b) academic performance was considered job performance (e.g., Holbrook, 1997).

Primary studies of the relationship between EI and cognitive ability were excluded from the analysis if they used student GPA as a measure of cognitive ability. Studies of relationships between EI and personality were included if a measure of Big Five personality traits was administered and enough information was provided to calculate a correlation with any one or more of the Big Five personality traits. In addition, all studies being considered for the current meta-analysis were required to provide the sample size and to consist primarily of adult participants (over age 16). These inclusion criteria resulted in a final database of 118 usable studies, with a total sample size of 30,077.

Data Coding

Studies that passed the inclusion criteria were coded on several attributes. Each study was coded for an effect size between EI and job performance, personality, cognitive ability, sex, or race, as well as for measures used to assess the relevant variables, reliability of these measures, sample size, and participant characteristics. All measures of EI were also coded for the construct measured (ability or mixed EI) and method employed (self-report or performance-based). Any EI measure purported to be based on an ability model was subsequently classified as an ability measure. This group included the following EI measures: MSCEIT (Mayer, Salovey, Caruso, & Sitarenios, 2003), MEIS (Mayer, Caruso, & Salovey, 1999), WLEIS (Wong & Law, 2002), EIS (Schutte et al., 1998), and WEIP (Jordan, Ashkanasy, Hartel, & Hooper, 2002). All other EI measures were classified as mixed measures. Regarding the method of each EI measure, any measure scored by marking questions as correct or incorrect based on expert or consensus scores was considered a performance-based measure (i.e., MSCEIT and MEIS), and all other measures were coded as self-report EI measures. As a result of the construct and method coding, all EI measures were classified as one of the following construct–method pairings: self-report ability EI, self-report mixed EI, performance-based ability EI, or performance-based mixed EI. Because no studies involved performance-based mixed measures of EI, we hereafter refer to performance-based ability EI measures as performance-based EI measures. Finally, all performance-based measures of EI were coded for relationships between dimensions of EI and any relevant variable (see Table 3). In order to determine the accuracy of the coding process, two researchers coded all articles identified in the original search. The agreement between the two coders at the item level was 98%, and any disagreements were discussed and resolved between the coders.

Data Analysis

The current meta-analysis followed procedures outlined by Hunter and Schmidt (2004). Because the current meta-analysis is an attempt to determine the theoretical relationship between EI and various variables, all effect sizes were corrected for range restriction and attenuation due to measurement error in both predictor and criterion. In an effort to use independent sample effects, we included only one effect size per sample in each meta-analysis. If a sample provided multiple, facet-level effect sizes for one relationship, a composite correlation was constructed (Nunnally, 1978; see Judge, Thoresen, Bono, & Patton, 2001).

In order to test the fit of the cascading model of EI (see Figure 1), we used the meta-matrix shown in Table 3 (see Shadish, 1996). For the cascading model of EI (see Figure 1), correlations involving the subdimensions of EI are based only on the MEIS and MSCEIT measures of EI. The MEIS and MSCEIT are the only two performance-based EI measures on which facet-level data were available.

To assess incremental validity, we ran a series of multiple regression models based upon the meta-matrix in Table 4. Table 4 contains correlations that are corrected only for range restriction and measurement error in the criterion (i.e., practical, operational validities). Table 4 correlations between Big Five personality traits and cognitive ability found in Judge et al. (2007) were uncorrected (i.e., we attenuated them, to calculate operational validities). We assumed reliability of .90 for cognitive ability and used the unit-weighted internal consistency reliabilities found in Viswesvaran and Ones (2000, p. 231) for the Big Five personality measures. Finally, we calculated Black–White and female–male meta-analytic subgroup *d* values for each construct–method EI pairing.

Results

Meta-Analytic Results

Results of the meta-analyses are presented in Tables 1, 2, 3, and 6. The intercorrelations among EI construct–method pairings (see Table 3) are not what one would expect from different measures of the same construct. In particular, the attenuation-corrected corre-

Table 4
Meta-Analytic Correlation Matrix of Operational Validities (Corrected for Criterion Unreliability and Range Restriction Only)

	1	2	3	4	5	6	7	8	9
1. Performance-based ability EI	—								
2. Self-report ability EI	.12	—							
3. Self-report mixed EI	.23	.52	—						
4. Conscientiousness	.12	.32	.33	—					
5. Emotional Stability	.17	.34	.45	.19[a]	—				
6. Agreeableness	.25	.26	.36	.19[a]	.18[a]	—			
7. Extraversion	.15	.27	.40	.00[a]	.14[a]	.12[a]	—		
8. Openness	.18	.24	.26	−.04[a]	.12[a]	.08[a]	.12[a]	—	
9. Cognitive ability	.22	.00	.09	−.03[b]	.08[b]	.00[b]	.02[b]	.18[b]	—
10. Job performance	.17	.22	.42	.19[c]	.10[c]	.07[c]	.09[c]	.06[c]	.40[d]
High emotional labor	.23	.26	.47	.19	.10	.07	.09	.09	.33
Low emotional labor	.01	.19	.37	.23	.14	.10	.09	.04	.35

Note. Correlations with job performance are corrected for attenuation in the criterion and range restriction. All other correlations are observed correlations. [a] Ones (1993). [b] Judge et al. (2007). [c] Hurtz & Donovan (2000; updated through 2008). [d] Hunter & Hunter (1984).

lation between self-report ability EI and performance-based ability EI is only .12, which suggests that these measures may not both be measuring ability EI as purported. A similarly low correlation is found between performance-based EI and self-report mixed EI ($\hat{\rho}$ = .26; cf. Van Rooy & Viswesvaran, 2004). The correlation between self-report ability EI and self-report mixed EI ($\hat{\rho}$ = .59) is substantial, suggesting that these measures may tap into a similar construct (affirming the decision of Van Rooy, Viswesvaran, and colleagues to lump these two EI self-reports together in their analyses). Hence, although we report correlations of overall EI with personality, cognitive ability, and job performance in Table 2, we warn that the concept of overall EI (averaged across the three construct–method pairings) is of limited conceptual value due to inconsistent and low correlations among some types of EI measures.

Correlations between ability-based EI dimensions and relevant variables are reported in Table 1. As predicted, the EI facet of emotion regulation shows a positive relationship with job performance, $\hat{\rho}$ = .18, 95% CI [.03, .27]. However, the effect size has a credibility interval that includes zero and the percentage of variance accounted for by sampling error is 45%, suggesting there are substantive moderators of the relationship between emotion regulation and job performance. We also found positive hypothesized relationships between Conscientiousness and emotion perception, $\hat{\rho}$ = .28, 95% CI [.13, .38]; cognitive ability and emotion understanding, $\hat{\rho}$ = .39, 95% CI [.25, .37]; and Emotional Stability and emotion regulation, $\hat{\rho}$ = .17, 95% CI [.07, .20].

When we look at self-reported EI (see Table 2), the mixed EI correlations with Big Five personality traits are relatively large ($\hat{\rho}_{Agreeableness}$ = .43, $\hat{\rho}_{Conscientiousness}$ =.38, $\hat{\rho}_{EmotionalStability}$ = .53, $\hat{\rho}_{Extraversion}$ = .46, $\hat{\rho}_{Openness}$ = .29), which is consistent with the conceptualization of mixed EI as a mixture of personality traits, motivation, and affect (Bar-On, 1997; Goleman, 1995). Also consistent with this conceptualization, there is a small relationship between mixed EI and cognitive ability ($\hat{\rho}$ = .11).

Findings involving self-reported mixed EI were echoed by findings for self-reported ability-based EI measures (see Table 2). Self-reported ability EI (like self-reported mixed EI) exhibited moderate associations with Big Five personality ($\hat{\rho}_{Agreeableness}$ = .31, $\hat{\rho}_{Conscientiousness}$ =.38, $\hat{\rho}_{EmotionalStability}$ = .40, $\hat{\rho}_{Extraversion}$ = .32, $\hat{\rho}_{Openness}$ = .29) but a nil relationship with cognitive ability ($\hat{\rho}$ = .00). The latter correlation is a bit surprising, because it brings into question the labeling of these measurements as ability-based measurements of emotional intelligence.

In contrast to self-reported EI measures, performance-based ability EI showed uniformly weaker correlations with personality ($\hat{\rho}_{Agreeableness}$ = .29, $\hat{\rho}_{Conscientiousness}$ =.13, $\hat{\rho}_{EmotionalStability}$ = .20, $\hat{\rho}_{Extraversion}$ = .18, $\hat{\rho}_{Openness}$ = .21) and a stronger relationship with cognitive ability ($\hat{\rho}$ = .25). Finally, we note that mixed-based EI measures showed a considerably stronger relationship with job performance ($\hat{\rho}$ = .47) in comparison to self-report ability EI ($\hat{\rho}$ = .23) and performance-based EI ($\hat{\rho}$ = .18).

The Cascading Model of EI

The meta-matrix used to test the fit of the cascading model of EI is presented in Table 3. Results testing the fit of the cascading model of EI are presented in Figure 2. The fit statistics for the full model with nine degrees of freedom are root mean square error of approximation (RMSEA) = .071, comparative fit index (CFI) = .97, Tucker–Lewis index (TLI; nonnormed fit index) = .92, and standardized root mean square residual (SRMR) = .040. All of the fit statistics were judged to be in acceptable ranges (Hu & Bentler, 1999). All hypothesized structural paths were statistically significant and in the expected directions (Hypothesis 1: β = .08, $p < .05$; Hypothesis 3: β = .28, $p < .05$; Hypothesis 4: β = .35, $p < .05$; Hypothesis 5: β =.12, $p < .05$), except for the direct path from Emotional Stability to job performance (β = −.00, *ns*). As a test of Hypothesis 2, we estimated the direct (unmediated) path from emotion perception to emotion regulation ($\beta_{Perc,\mathrm{Re}\,g}$ = .10; $p < .05$). This result suggests that the relationship between emotion perception and emotion regulation is not completely mediated (James et al., 2006; contrary to Hypothesis 2). On the other hand, this direct effect is much smaller in magnitude than the indirect effect ($\beta_{Perc,Under}\beta_{Under,\mathrm{Re}\,g}$ = (.43)(.53) = .23), and the impact of specifying the direct (unmediated) effect has little relative impact on overall model fit (ΔCFI = .008). In other words, much of the relationship between emotion perception and emotion regulation is mediated by emotion understanding.

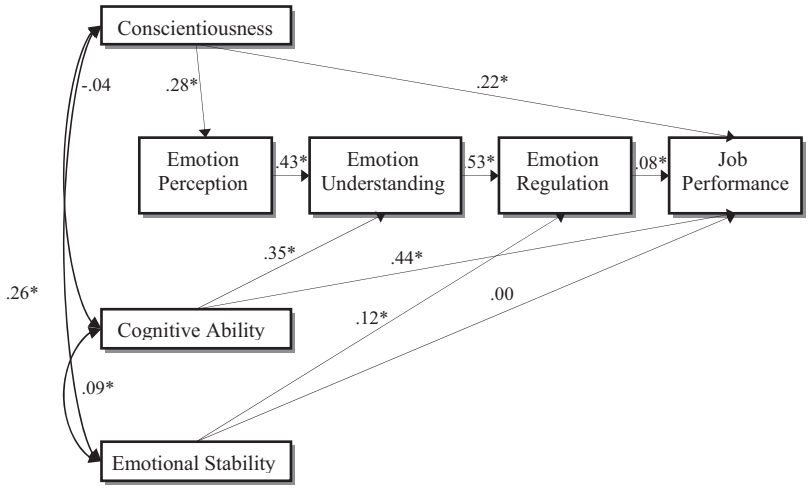

Figure 2. Cascading model of emotion intelligence (EI; parameter estimates). The above model was tested on data from performance-based EI measures (RMSEA = .071, CFI = .97, TLI = .92, SRMR = .040, harmonic mean N = 2,285). RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual.

Discriminant, Convergent, and Incremental Validity of EI Construct–Method Pairings

To examine convergent validity, we assessed the correlation between two measures of the same construct (ability EI) and found the correlation to be quite weak ($\hat{\rho}_{Self\text{-}Report\ Ability.Performance\text{-}Based\ Ability}$ = .12; see Table 3). This suggests that self-report ability EI measures and performance-based ability EI measures are not assessing a singular ability EI construct, as they are purported to (failing to support Hypothesis 6a). When discriminant validity was assessed, the correlation between performance-based measures of ability EI and self-reported mixed EI was low enough to suggest that ability EI and mixed EI are in fact distinct constructs (discriminant validity; $\hat{\rho}_{Self\text{-}Report\ \ Mixed.Performance\text{-}Based\ \ Ability}$ = .26; supporting Hypothesis 6b). It is interesting to note that the two self-report measures were correlated at $\hat{\rho}_{Self\text{-}Report\ \ Mixed.Self\text{-}Report\ \ Ability}$ = .59, signaling a strong method effect (monomethod correlation = .59, heteromethod correlation = .26). Finally, an examination of the incremental validity of these measures over each other reaffirmed the lack of convergent validity between the two ability EI measures: that is, self-reported ability EI predicted job performance beyond performance-based ability EI measures (ΔR^2 = 4.4%, $p <$ .05), and performance-based ability EI also showed incremental validity over self-reported ability EI (ΔR^2 = 2.4%, $p <$ .05). Regarding mixed EI, neither self-report ability EI nor performance-based ability EI measures predicted job performance after controlling for self-report mixed EI measures. The fact that self-reports of ability EI offered almost no incremental validity over self-report mixed EI (ΔR^2 = 0.3%, $p <$ .05) supports the interpretation that self-reported ability EI greatly reflects the self-report method factor and does a poor job of reflecting the ability EI trait factor. Performance-based ability measures also offered little unique variance in predicting job performance over self-reported mixed EI (ΔR^2 = 0.4%, $p <$ .05). In contrast, self-report mixed EI showed substantial incremental validity over self-report ability EI (ΔR^2 = 17.1%, $p <$ .05), performance-based ability EI (ΔR^2 = 19.2%, $p <$ .05), and a combination of self-report ability EI with performance-based ability EI (ΔR^2 = 15.1%, $p <$ .05). This incremental validity is likely attributable to the nonability (motivational) content of mixed EI measures (Mayer et al., 2000) that is not captured by ability EI measures.

In sum, although these results show evidence for the discriminant validity of ability EI from mixed EI, there is weak evidence for similarity among ability EI measures (convergent validity) and weak evidence for incremental validity of self-report ability EI. These poor construct validity results for self-reported ability EI affirm our decision to omit this concept from the integrated theoretical model (see the cascading model in Figure 1). Our further decision to omit self-reported mixed EI from the theoretical model is based on the fact that mixed EI is a muddled construct—an ill-defined composite of ability, personality, affect, and possibly other poorly specified content (Murphy, 2006).

Incremental Validity of EI Over Big Five Personality and Cognitive Ability

The meta-matrix used to test the incremental validity of EI is presented in Table 4, and incremental validity results are presented in Tables 5a to 5c. Regarding the incremental validity of EI construct–method pairings over and above Big Five personality traits, all three construct–method pairings demonstrated significant (greater than zero) incremental validity ($\Delta R^2_{Performance-Based\ EI}$ = 1.5%, $\Delta R^2_{Self-report\ Ability\ EI}$ = 1.7%, $\Delta R^2_{Self-report\ Mixed\ EI}$ = 15.7%; ps < .05) and thus provided support for Hypothesis 7. Similarly, all three construct–method pairings showed some incremental validity over and above cognitive ability ($\Delta R^2_{Performance-Based\ EI}$ = 0.7%, $\Delta R^2_{Self-report\ Ability\ EI}$ = 4.8%, $\Delta R^2_{Self-report\ Mixed\ EI}$ = 14.9%; ps < .05). These results defied our expectation that ability EI would offer no incremental prediction above cognitive ability but were consistent with our expectation that mixed EI would exhibit significant incremental validity over Big Five personality and cognitive ability (supporting Hypothesis 8), due to mixed EI's inclusion of

Table 5
Incremental Validity for Emotional Intelligence Construct–Method Pairings Over Big Five Personality

	Models											
	P			I			II			III		
Variable	Overall	High EL	Low EL	Overall	High EL	Low EL	Overall	High EL	Low EL	Overall	High EL	Low EL
Big Five personality												
Agreeableness	.01	.01	.04	−.01	−.03	.05	−.01	−.01	.02	**−.10**	**−.12**	−.05
Conscientiousness	**.18**	**.18**	**.21**	**.17**	**.17**	**.21**	**.14**	**.13**	**.19**	.05	−.03	.11
Emotional Stability	.05	.04	.08	.03	.03	.09	.01	.00	.06	**−.12**	**−.14**	−.04
Extraversion	**.08**	.07	.07	.06	.05	.08	.04	.03	.05	**−.09**	**−.12**	−.05
Openness	.05	.08	.03	.03	.05	.04	.02	.04	.01	−.05	−.03	−.04
Emotional intelligence												
Performance-based				**.13**	**.19**	−.06						
Self-report ability							**.16**	**.20**	.09			
Self-report mixed										**.54**	**.62**	**.40**
R^2	**.050**	**.054**	**.070**	**.065**	**.087**	.074	**.067**	**.083**	**.076**	**.207**	**.263**	**.157**
Adjusted R^2	**.045**	**.036**	**.051**	**.059**	**.062**	.044	**.060**	**.072**	**.065**	**.203**	**.246**	**.136**
Change in R^2				**.015**	**.033**	.004	**.017**	**.029**	.006	**.157**	**.209**	**.087**

Note. Bold values are significant ($p < .05$). Standardized regression coefficients. Model P = personality; Overall = all jobs; High EL = high emotional labor jobs; Low EL = low emotional labor jobs.

surplus motivational constructs and other sundry content that might be performance relevant (see Bar-On, 1997).

Finally, only two construct–method pairings exhibited incremental validity over and above both Big Five personality traits and cognitive ability ($\Delta R^2_{Self-report\ Ability\ EI} = 2.3\%$, $\Delta R^2_{Self-report\ Mixed\ EI} = 14.2\%$; ps $< .05$), suggesting that performance-based EI measures are redundant with Big Five personality traits and cognitive ability when predicting overall job performance, on average across all jobs ($\Delta R^2_{Performance-Based\ EI} = 0.2\%$). It is important to note that although many of the incremental validity analyses produced statistically significant ΔR^2, this does not warrant the conclusion of practical significance. For example, performance-based ability EI contributes an additional 0.7% of variance in job performance above cognitive ability ($p < .05$; statistically significant). Whether we evaluate this effect size as practically significant depends on the given context and the likely utility of this tiny increment in R^2 due to EI.

Subgroup Differences and Emotional Intelligence

Table 6 presents results on female–male and Black–White subgroup differences in emotional intelligence. Regarding sex differences in EI, we find differences favoring women for performance-based EI tests ($d_{uncorrected} = 0.47$), supporting the common assumption that women have higher EI scores than do men (supporting Hypothesis 9). With a sex-based subgroup difference d of this magnitude, adverse impact against the lower scoring group (against men) is mathematically very likely (Newman, Jacobs, & Bartram, 2007, p. 1404; Equal Opportunity Employment Commission, Civil Service Commission, U.S. Department of Labor, & U.S. Department of Justice, 1978). In contrast, we find no average sex-related differences for self-report ability EI and mixed measures of EI ($d_{uncorrected} = 0.01$ for both self-report measures) and therefore no systematic potential for adverse impact against either sex.

Table 5b
Incremental Validity for Emotional Intelligence Construct–Method Pairings Over Cognitive Ability

	Models								
	IV			V			VI		
Variable	Overall	High EL	Low EL	Overall	High EL	Low EL	Overall	High EL	Low EL
Cognitive ability	**.38**	**.29**	**.37**	**.40**	**.33**	**.35**	**.37**	**.29**	**.32**
Emotional intelligence									
Performance-based	**.09**	**.17**	−.07						
Self-report ability				**.22**	**.26**	**.19**			
Self-report mixed							**.39**	**.44**	**.34**
R^2	**.167**	**.135**	**.127**	**.208**	**.177**	**.159**	**.309**	**.304**	**.238**
Adjusted R^2	**.165**	**.127**	**.118**	**.207**	**.173**	**.155**	**.307**	**.299**	**.232**
Change in R^2	**.007**	**.024**	.004	**.048**	**.068**	**.036**	**.149**	**.162**	**.115**

Note. Bold values are significant ($p < .05$). Standardized regression coefficients. Overall = all jobs; High EL = high emotional labor jobs; Low EL = low emotional labor jobs.

Table 5c
Incremental Validity for Emotional Intelligence Construct–Method Pairings Over Big Five Personality and Cognitive Ability

	Models											
	P&C			VII			VIII			IX		
Variable	Overall	High EL	Low EL	Overall	High EL	Low EL	Overall	High EL	Low EL	Overall	High EL	Low EL
Big Five personality												
Agreeableness	.02	.02	.04	.01	−.01	.07	.00	−.01	.03	**−.09**	**−.11**	−.04
Conscientiousness	**.19**	**.19**	**.22**	**.19**	**.18**	**.23**	**.15**	**.13**	**.19**	**.07**	.05	**.13**
Emotional Stability	.02	.02	.06	.01	.01	.07	−.02	−.03	.03	**−.14**	**−.16**	−.06
Extraversion	**.08**	.08	.07	**.07**	.06	.09	.04	.03	.05	**−.08**	**−.11**	−.04
Openness	−.02	.03	−.03	−.02	.01	−.02	−.06	−.02	−.06	**−.11**	−.08	−.10
Cognitive ability	**.41**	**.33**	**.36**	**.40**	**.30**	**.38**	**.42**	**.34**	**.36**	**.39**	**.31**	**.34**
Emotional intelligence												
Performance-based				.05	**.13**	**−.14**						
Self-report ability							**.18**	**.23**	**.11**			
Self-report mixed										**.51**	**.60**	**.38**
R^2	**.209**	**.157**	**.193**	**.211**	**.172**	**.210**	**.232**	**.194**	**.202**	**.351**	**.353**	**.271**
Adjusted R^2	**.204**	**.138**	**.173**	**.204**	**.145**	**.181**	**.226**	**.183**	**.191**	**.347**	**.336**	**.249**
Change in R^2				.002	**.015**	**.017**	**.023**	**.037**	**.009**	**.142**	**.196**	**.078**

Note. Bold values are significant ($p < .05$). Standardized regression coefficients. Model P&C = personality and cognitive ability; Overall = all jobs; High EL = high emotional labor jobs; Low EL = low emotional labor jobs.

Turning to our findings regarding race and emotional intelligence, we first note a substantial lack of available data (see Table 6). Therefore, our race results should be interpreted with caution and should serve as a call for future EI researchers to report race differences in their measures. With this in mind, we find that performance-based ability EI tests show the largest subgroup differences favoring Whites ($d_{uncorrected} = -0.99$), followed by self-report mixed EI measures ($d_{uncorrected} = -0.22$). In contrast, self-report ability EI measures showed subgroup differences favoring Blacks ($d_{uncorrected} = 0.31$). Comparing these results to subgroup differences on cognitive ability, current estimates (within medium complexity jobs) suggest that Whites' average scores on cognitive ability measures are .72 standard deviations above Blacks' average scores (Roth, Bevier, Bobko, Switzer, & Tyler, 2001). Because Black–White subgroup *d* values for self-report ability EI and self-report mixed EI measures appear to be smaller than those for cognitive ability tests, a composite of these EI measures with cognitive tests has the potential to reduce adverse impact against Blacks. In contrast, performance-based measures may actually increase the potential for adverse impact against Blacks when used in combination with a cognitive ability test. In sum, we have shown that race- and sex-based subgroup differences vary substantially according to which type of measure one uses to assess EI, with the most construct-valid (i.e., performance-based) EI measures showing the largest sex- and race-based differences.

Discussion

The current study sought to clarify the theoretical basis of emotional intelligence and to address proponents' claims that EI is highly predictive of job performance above well-established constructs (Goleman, 1995). We extended the influential work of Van Rooy, Viswesvaran, and colleagues (Van Rooy & Viswesvaran,

Table 6
Meta-Analytic Estimates of Female–Male and Black–White Subgroup d

	Female–male subgroup *d*						Black–White subgroup *d*					
Measure	*k*	*N*	% female	*d*	95% CI	$d_{corrrected}$	*k*	*N*	% Black	*d*	95% CI	$d_{corrrected}$
Overall EI	47	16,383	55	.07	[.004, .14]	.08	7	1,991	38	−.19	[−.40, .02]	−.17
Performance-based EI	14	2,216	54	.47	[.24, .72]	.52	1	131	42	−.99	—	−1.06
Emotion perception	8	1,065	55	.49	[.34, .64]	.53	1	136	43	−.71	—	−.75
Emotion understanding	6	861	56	.29	[.11, .47]	.31	1	135	43	−.93	—	−.99
Emotion facilitation	9	1,280	51	.38	[.25, .51]	.41	1	135	43	−1.06	—	−1.14
Emotion regulation	9	1,190	51	.43	[.31, .56]	.47	1	132	43	−.79	—	−.84
Self-report ability EI	20	5,542	56	.01	[−.06, .06]	.01	2	305	20	.31	—	.33
Self-report mixed EI	19	8,942	54	.01	[−.06, .08]	.02	4	1,555	42	−.22	[−.32, −.12]	−.26

Note. Positive *d* values mean females scored higher and Blacks scored higher, respectively. EI = emotional intelligence; *k* = number of effect sizes in the meta-analysis; *N* = total sample size in the meta-analysis; % female/Black = percent of total sample size that was reported as female or Black; *d* = sample-size weighted mean standardized difference; 95% CI = lower/upper bound of confidence interval; $d_{corrrected}$ = standardized mean difference corrected for attenuation.

2004; Van Rooy, Viswesvaran, & Pluta., 2005) by distinguishing the subfacets of EI (emotion regulation, emotion perception, and emotion understanding); testing an integrated theoretical model for how these subfacets relate to cognitive ability, Conscientiousness, Neuroticism, and job performance; using narrower definitions of job performance (excluding student performance); distinguishing self-reported ability-based EI from self-reported mixed-based EI; and including an updated database with many newer studies. By answering calls for a theoretical elaboration of EI (Murphy, 2006; Zeidner et al., 2004), we provide a theoretically driven model of EI and job performance, labeled the cascading model of EI (see Figure 1). This model of EI specifies a sequential (causal chain) relationship among the three subdimensions of EI and job performance and includes personality traits and cognitive ability as important antecedents of the EI processes. Meta-analytic data showed good fit with the cascading model, although the emotion regulation–job performance connection turned out to be inconsistent (as we discuss below). This result is supported by a history of emotion regulation literature that points to differences in the extent to which certain emotion regulation processes are effective (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002; Côté, 2005; Diefendorff & Gosserand, 2003; Goldberg & Grandey, 2007; Grandey, 2003; Grandey et al., 2005).

Finally, the current study contributed to EI research and personnel selection practice by evaluating the potential for EI measures to incrementally predict job performance. What has come to be known as the fadification of EI (Murphy & Sideman, 2006) has been driven by claims related to the importance of EI in predicting job performance. For example, Goleman has proposed, "for star performance in all jobs, in every field, emotional competence is twice as important as purely cognitive abilities" (1998, p. 34). Our incremental validity results based on meta-analytic data show that this is not true. At best, only mixed models of EI show substantial incremental validity over cognitive ability and Big 5 personality traits. At worst, measures of ability models of EI show only a modicum of incremental validity over cognitive ability and personality traits, again providing evidence against Goleman's (1998) expansive claims.

Emotional Intelligence Facets

The current study addressed long-standing questions about the overlaps of EI with cognitive ability, Neuroticism, Conscientiousness, and job performance; showing that these relationships are critically dependent upon which facet of EI is under consideration. By focusing on facet-level emotional intelligence, we showed that cognitive ability plays a role in emotional understanding, Conscientiousness is involved in emotion perception, and Emotional Stability is a basis for emotion regulation. We also highlighted the key conceptual role of emotion regulation in connecting EI to job performance (see Figure 1). This specification helps to tie the faddish EI practitioner literature into a long-standing, theory-laden tradition of psychological research on emotion regulation and self-regulation (Eisenberg, 2000; Gross, 1998a; Izard, 1991; Muraven & Baumeister, 2000).

Emotional Labor as a Moderator

On the topic of emotion regulation at work, results of the current meta-analysis have created some serious questions regarding the ubiquity of emotional intelligence as a precursor to job performance (see Table 1; cf. Goleman, 1995). For example, although the path coefficient connecting emotion regulation to job performance is statistically significant ($\beta = .08$; see Figure 2), the small magnitude of this parameter questions the practical significance of this relationship. We further note the presence of situational moderators of the validity of emotion regulation, as suggested by the wide credibility interval for the regulation–job performance relationship (see Table 1; 80% CI includes zero).

To investigate potential situational moderation for emotional intelligence effects on performance, we conducted a post hoc analysis of the relationship between EI and job performance by splitting the EI–performance primary studies into two, theoretically distinct subpopulations based on emotional labor requirements of the job. Emotional labor theory suggests that a job's demands for emotional labor, or "the process of regulating both feelings and expressions for organizational goals" (Grandey, 2000, p. 97), may serve as a moderator of the relationship between emotional intelligence and performance (Grandey, 2000; Wong & Law, 2002). For example, occupations in which there is frequent customer/interpersonal interaction (i.e., high emotional labor) require more emotion regulation. Emotion regulation demands can drain resources from task performance (Baumeister et al., 1998; Beal et al., 2005), unless the employee possesses heightened ability to effectively regulate emotion. Thus, we would expect individuals with high emotion regulation ability to perform especially well in jobs that require high emotional labor. On the other hand, occupations in which there is infrequent interpersonal interaction rely less on the ability to regulate emotions, and we would expect the relationship between emotion regulation ability and job performance to be lower in these jobs.

In our classification, we asked nine PhD students in industrial/organizational psychology to each rate the emotional labor demands for 191 job titles taken from (a) each primary study included in our original meta-analyses concerning EI and job performance, (b) all the primary studies in our updated [through 2008] meta-analyses of Hurtz and Donovan's (2000) Big Five personality validities, and (c) the primary studies included in Hunter and Hunter's (1984) synthesis of research on cognitive ability validity (in all, 476 of the 515 primary studies could be located and provided enough information about job titles to enable emotional labor coding, with 191 distinct job titles represented). We limited our moderator analyses to those primary studies involving correlations with job performance, because we had no theoretical reason to expect emotional labor to moderate the relationships among predictors (i.e., between EI and personality or between EI and cognitive ability). Each rater coded all 191 job titles by answering each of the following four items about emotional labor (items are adapted from p. 92 of Grandey's, 2003, three-item measure of emotional display rules, with the addition of one item, and are based on Hochschild's, 1983, criteria for emotional labor jobs): "Workers are expected to express positive emotion as part of this job," "Part of this job is to make the customer feel good," "Part of the product to customers is friendly, cheerful service," and "Displaying positive emotion is an important part of job performance" ($\alpha = .98$ for 4-item scale). Each item was coded as "yes" or "no." We note that Grandey's (2003) scale focuses on positive display requirements of the job (although it

should be mentioned that emotional labor requirements could also logically include negative displays of emotion). Interrater reliability (Cronbach's α across the nine raters) was .94, and rater agreement was $r_{WG(J)} = .97$.

We next averaged across items and calculated the mean of raters' emotional labor scores for each job title. The distribution of these mean emotional labor ratings was bimodal and showed a natural breaking point at .5, making this an ideal cutoff for high versus low emotional labor jobs. A large number of jobs fit into the low emotional labor category (i.e., 141 of the 191 job titles coded were below the .5 scale midpoint, and 50 of the 191 jobs were at or above the midpoint). Examples of low emotional labor jobs include military policeman, cigarette factory worker, Air Force mechanic, and research and development scientist; examples of high emotional labor jobs are retail salesperson, real estate agent, call center employee, and residential counselor. When a single primary study involved a mixed sample of jobs, we included the mixed sample in our moderator analyses only if (a) the study reported the types of jobs involved in the mixed sample and (b) the mean ratings of emotional labor for every job in the sample fell above or below the cutoff of .5. Meta-analytic correlations within the high and low emotional labor groups were calculated (see Tables 1, 2, 3, and 4), and incremental validity of EI over personality and cognitive ability was assessed within high and low emotional labor jobs separately (see Table 5).

Results of our post hoc analyses (see Tables 1, 2, 3, 4, and 5) support emotional labor theory (Hochschild, 1983; Grandey, 2000), with high emotional labor jobs showing a stronger emotion regulation–performance relationship ($\hat{\rho} = .26$) than low emotional labor jobs ($\hat{\rho} = .01$). It is important to note that these results are based on small sample sizes ($N = 220$ and $N = 223$, respectively) and should be interpreted accordingly. A similar pattern exists within other dimensions of EI, where stronger relationships with job performance are found in high emotional labor jobs ($\hat{\rho}_{EmotionPerception} = .21$, $\hat{\rho}_{EmotionUnderstanding} = .22$, $\hat{\rho}_{EmotionFacilitation} = .12$) than low emotional labor jobs ($\hat{\rho}_{EmotionPerception} = .01$, $\hat{\rho}_{EmotionUnderstanding} = .02$, $\hat{\rho}_{EmotionFacilitation} = -.04$). This pattern also exists across construct–method pairings of EI (high emotional labor: $\hat{\rho}_{Performance-based} = .24$, $\hat{\rho}_{Self-reportAbility} = .28$, $\hat{\rho}_{Self-reportMixed} = .59$; low emotional labor: $\hat{\rho}_{Performance-based} = .01$, $\hat{\rho}_{Self-reportAbility} = .20$, $\hat{\rho}_{Self-reportMixed} = .43$). Our tests of incremental validity (see Table 5) within strictly high emotional labor jobs also demonstrated the value of EI in these contexts. For example, mixed EI measures showed more incremental validity over personality and cognitive ability in high emotional labor jobs ($\Delta R^2_{Self-report\ Mixed\ EI} = 19.6\%$, $p < .05$) than in low emotional labor jobs ($\Delta R^2_{Self-report\ Mixed\ EI} = 7.8\%$, $p < .05$), as did self-report ability EI measures (high emotional labor: $\Delta R^2_{Self-reportAbilityEI} = 3.7\%$, $p < .05$; low emotional labor: $\Delta R^2_{Self-reportAbilityEI} = 0.9\%$, $p < .05$), and performance-based measures of EI (high emotional labor: $\Delta R^2_{Performance-basedEI} = 1.5\%$, $p < .05$; low emotional labor: $\Delta R^2_{Performance-basedEI} = 1.7\%$, $p < .05$—we note that the semipartial correlation of performance-based EI with job performance was negative for low emotional labor jobs see Table 5).

We also reestimated the cascading model of EI using the high emotional labor and low emotional labor correlations separately (analyses are reported in Figure 3). The cascading model showed adequate empirical fit for both high and low emotional labor jobs (RMSEA = .067, .078; CFI = .97, .95), although the theoretical model does appear to fit slightly better for high emotional labor jobs. The path coefficient connecting emotion regulation to job performance was stronger for high emotional labor jobs ($\beta = .17$) than for low emotional labor jobs ($\beta = -.11$). In sum, the correlational and incremental validity results point to emotional labor as an important moderator of the EI–performance relationship, across all EI construct–method pairings and in the cascading model. Again, it should be mentioned that the emotional labor moderator results are based on small sample sizes for the emotional labor subgroups (*N*s ranging from 220 to 516 per subgroup) and should therefore serve as preliminary evidence for emotional labor as a moderator of the EI–performance relationship. Future work in this area is certainly needed, given these results.

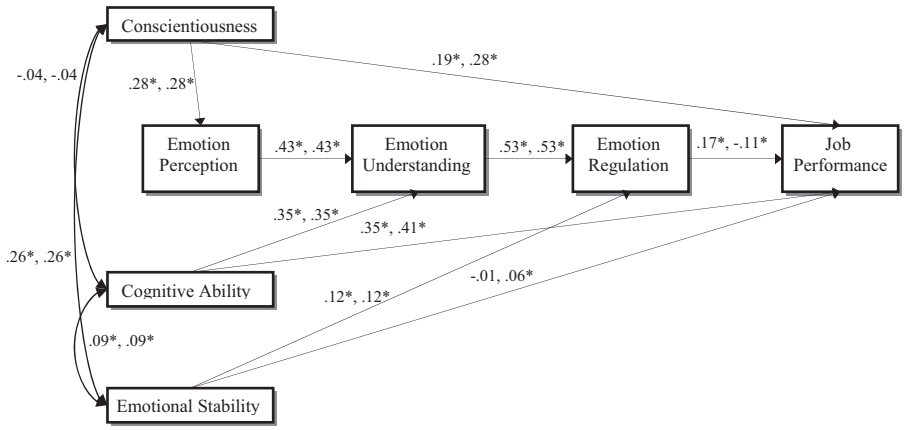

Figure 3. Emotional labor (EL) as a moderator in the cascading model of emotional intelligence. High EL parameters presented first, followed by low EL parameters. The above model was tested on data from performance-based emotional intelligence (EI) measures (RMSEA = .067, .078; CFI = .97, .95; TLI = .93, .89; SRMR = .044, .042; harmonic mean $N = 1{,}201, 1{,}213$). RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual.

The Two Emotional Intelligences: Ability-Based Versus Mixed-Based

As mentioned earlier, there are two senses in which the term *emotional intelligence* has been used: (a) as a narrow, theoretically specified set of constructs pertaining to the recognition and control of personal emotion (i.e., ability-based EI) and (b) as an umbrella term for a broad array of constructs that are connected only by their nonredundancy with cognitive intelligence (i.e., mixed-based EI). In the current study, we showed that EI measures derived using the first sense of the EI term (as a set of ability concepts rooted in social and personality psychology) are more theoretically grounded but suffer nongeneralizable criterion validity (i.e., emotional competence predicts performance only for high emotional labor jobs) and show substantial sex- and race-based subgroup differences. Measures derived under the second sense of EI (as an umbrella; mixed EI) show robust empirical evidence of criterion validity and smaller sex- and race-based subgroup differences, albeit with questionable theoretical value.

Correlations among EI construct–method pairings (mixed, performance-ability, and self-report ability) do not suggest these measures are reflecting the same construct. Surprisingly, the lowest correlation between construct–method pairings existed between self-report ability and performance-based ability EI measures ($\hat{\rho}$ = .12), which are designed to measure the same construct (ability EI). Potential explanations for this weak relationship are discussed below.

Results appear to support critics' claims that mixed EI exhibits significant overlap with Big Five personality traits (Daus & Ashkanasy, 2003). Upon examining the items of a popular mixed-based measure of EI, the EQ-i (Bar-On, 1997), we see that several EQ-I items deal directly with nervousness and anxiety. It therefore comes as no surprise that mixed EI shows a moderate relationship with Emotional Stability. Self-reports of mixed EI were also shown to have a weak relationship with cognitive ability, consistent with the conceptualization of mixed EI models as measuring a combination of intellect, personality, motivation, and affect.

Meanwhile, performance-based ability measures and self-report ability measures of EI show similar patterns of relationships with Big 5 personality traits but different relationships with cognitive ability ($\hat{\rho}_{\text{Performance-based}}$ = .28, $\hat{\rho}_{\text{Self-report Ability}}$ = .00). A closer look at items on self-report measures of ability EI casts doubt on the extent to which an actual ability is being measured. For example, one of the 16 items on the WLEIS (Wong & Law, 2002; Emotion Facilitation facet) is "I always set goals for myself and then try my best to achieve them." This item—which is similar to three other WLEIS items—appears to address motivation rather than ability. We propose, due to items like this on self-reports of ability EI, that self-reports of ability EI are similar to mixed-based measures of EI in that research has yet to confirm exactly what set of constructs are being measured with these scales (see Joseph & Newman, in press). Notably, a self-report of ability may also be susceptible to socially desirable responding (Paulhus, 1984), and self-reports of ability have been criticized for the inherent paradox in asking individuals to report their own level of intelligence (Matthews, Emo, Roberts, & Zeidner, 2006). The only construct–method pairing examined in the current study that appears to be an appropriate use of the label *emotional intelligence* is the performance-based EI model, which is theoretically based in emotion and emotion regulation literature and has a relationship with general cognitive ability, as the name *intelligence* implies.

Limitations and Directions for Future Research

The current study tested a theoretically driven model of EI and job performance. Unfortunately, the sample sizes for some of our key effects are smaller than we would have liked. Surprisingly, although EI measures appear ubiquitous in practice, there is a paucity of research on EI that uses actual job performance (e.g., supervisor ratings of job performance) as a criterion. Many potential primary studies speaking to the relationship of EI with job performance were not included because they chose to use proxies of job performance (e.g., academic performance, self-reported job performance, teacher ratings of students acting as employees). Although a PsycINFO keyword search of *emotional intelligence* returned over 900 peer-reviewed journal articles, only 22 of these studies measured real job performance. There remains a pressing need for future work regarding the relationship between EI and actual performance on the job.

A second recommendation to EI researchers involves measuring and reporting sex-based and race-based subgroup differences on EI. Our results show that although a substantial amount of evidence exists regarding sex differences on overall EI, very little empirical work has reported on sex differences in EI dimensions. The evidence for race differences in EI is even more sparse. Only one primary study has investigated race differences in performance-based EI measures, and because the evidence points to substantial differences favoring Whites on these measures (which could produce adverse impact), the issue deserves additional attention. Although there are more estimates of race differences on self-report measures of EI than on performance-based EI measures, the number of effect sizes is not substantial and also warrants additional attention. In sum, researchers investigating EI should measure and report both sex-based and race-based differences on overall EI and EI dimensions.

Third, although EI researchers have begun to examine what self-reported EI isn't (e.g., personality and cognitive ability), the EI literature has yet to investigate exactly what self-reported EI is. Though the results of the current meta-analysis show the incremental validity of self-report measures of mixed EI over personality and cognitive ability, the lack of conceptual clarity in mixed EI models leads us to caution against their application in organizations. That is, without further investigation of the constructs that mixed EI measures assess, selection practitioners will be relying upon inventories with limited construct validity (Landy, 1986). Self-report measures of ability EI suffer from problems similar to those of mixed measures, in that not all of the items on these measures appear to assess a true intelligence. Therefore, we caution against applying the current results to organizational settings without knowledge of the constructs assessed by these self-report measures. Future work on the construct-related validity of both self-report mixed and self-report ability measures is necessary for the advancement of self-reported EI as a viable construct (or set of constructs; for exemplary work of this sort, see Law et al., 2004). This would involve an in-depth examination of the relationships between these measures and established constructs other than personality and cognitive ability, such as self-efficacy and achievement moti-

vation (Mayer et al., 2008). Although we have established that the mixed model of EI is not redundant with personality traits or cognitive ability, its redundancy with other well-established constructs merits investigation.

Another limitation of the current study is our lack of longitudinal data on which to base the cascading model. That is, despite our supportive test of a mediation relationship from emotion perception to emotion understanding to emotion regulation, we have not actually observed the unfolding of this process in situ. To further confirm our cross-sectional test of the theoretical model, we estimated all possible alternative sequential orderings among the three EI facets and found that all orderings other than the one shown in Figure 1 exhibited clearly inferior empirical fit ($\Delta\chi^2_{(\Delta df = 0)} > 39.0$, change in RMSEA $> .012$). Nonetheless, we have provided only a snapshot of the dynamic process.

Conclusion and Implications

These results have serious implications for the large number of organizational practitioners who use EI measures in training and selection. We recommend that practitioners use caution when choosing a measure of EI. Our results show large differences in predictive validity and subgroup differences between types of EI measures, and although mixed EI measures appear to offer the strongest predictive power, we warn against their use due to their unknown content and theoretical value. A summary of these implications is presented in Table 7.

In sum, the EI concept has been developed and understood in two, distinct ways: (a) as a set of specific competencies for recognizing and controlling individual emotions and (b) as a grab bag of constructs that contribute to job performance but are not redundant with cognitive ability. In the current study, we theoretically and empirically contrasted these two perspectives. The former viewpoint (called the ability model of EI) was specified with strong theoretical propositions drawing upon decades of research in social and personality psychology, but it exhibited criterion validity only in localized settings (i.e., it did not predict job performance across all types of jobs). The latter viewpoint (called the mixed model of EI) showed greater promise for generalizable prediction of job performance, but it suffers extreme theoretical underdevelopment. As such, the current status of emotional intelligence research presents the scientist–practitioner with a trade-off between theory and data—an ugly state of affairs. More research should assess (a) the relationship between EI and actual job performance, (b) sex and race differences on EI, and (c) the overlap of self-report ability and self-report mixed EI with many long-established constructs other than Big Five personality and cognitive ability. Indeed, one of the eventual advantages of the mixed EI notion may be to shed greater light on noncognitive constructs (other than Big Five personality) that predict job performance. In the current paper, we have attempted to integrate the existing research within a theoretical framework in hopes of directing future investigations on emotional competence in the workplace.

Table 7
Practical Advice For Using Emotional Intelligence Measures In Personnel Selection

1. Choose your EI measure carefully.
   There are two, distinct definitions of the term "Emotional Intelligence": (a) ability to perform emotional tasks, and (b) a grab-bag of everything that is not cognitive ability. It is critical to distinguish these two, because measures based on the two EI definitions do not have the same content, predictive validity, or subgroup differences.
2. Exercise extreme caution when using mixed EI measures.
   Grab-bag measures of EI (i.e., self-report mixed measures) appear to exhibit some incremental validity over cognitive ability and personality measures on average (based on nine studies), but it is not clear *why*. As such, use of these measures for personnel decisions may be difficult to defend, without extensive local validation.
3. Know that ability EI measures may add little to the selection system.
   Ability-based measures of EI (performance-based and self-report) exhibit little incremental validity over cognitive ability and personality, on average.
4. Base the decision to use an EI measure on the job type (i.e., consider the emotional labor content of the job).
   When dealing with high emotional labor jobs (jobs that require positive emotional displays), all types of EI measures exhibit meaningful validity and incremental validity over cognitive ability and personality. In contrast, for low emotional labor jobs, EI validities are weaker or can even be negative.
5. Be aware of subgroup differences on EI.
   Although more data are needed, preliminary evidence suggests that performance-based EI measures favor women and Whites, which may produce adverse impact against men and African Americans.

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