Special Issue: Capturing the Dynamics of Emotion and Emotion Regulation in Daily Life With Ambulatory Assessment
Multistudy Report

Emotional Intelligence Relates to Emotions, Emotion Dynamics, and Emotion Complexity

A Meta-Analysis and Experience Sampling Study

Carolyn MacCann[1], Yasemin Erbas[2], Egon Dejonckheere[2], Amirali Minbashian[3], Peter Kuppens[2], and Kirill Fayn[2,4]

[1]School of Psychology, University of Sydney, NSW, Australia
[2]KU Leuven, Belgium
[3]School of Management, UNSW Business School, Sydney, NSW, Australia
[4]Max Planck Institute for Empirical Aesthetics, Frankfurt am Main, Germany

Abstract: Emotional intelligence (EI) should relate to people's emotional experiences. We meta-analytically summarize associations of felt affect with ability EI branches (perception, facilitation, understanding, and management) and total scores (k = 7–14; N = 1,584–2,813). We then use experience sampling (N = 122 undergraduates over 5 days, 24 beeps) to test whether EI predicts emotion dynamics and complexity. Meta-analyses show that EI correlates significantly with lower negative affect (NA; ρ = −.21) but not higher positive affect (PA; ρ = .05). PA (but not NA) shows a significantly stronger relationship with emotion management (ρ = .23) versus other EI branches (ρ = −.01 to .07). In the experience sampling study, only management significantly related to higher PA, whereas lower NA was significantly related to total EI, perception, facilitation, and management. After controlling for mean affect: (a) only understanding significantly predicted NA dynamics whereas only management and facilitation significantly predicted PA dynamics; (b) management and facilitation predicted *lower* PA differentiation (EI was unrelated to NA differentiation); and (c) perception and facilitation predicted greater bipolarity. Results show that EI predicts affect, emotion dynamics, and emotion complexity. We discuss the importance of distinguishing between different branches of ability EI.

Keywords: emotional intelligence, emotion dynamics, emotion complexity, experience sampling, meta-analysis

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Emotional intelligence (EI) describes differences in people's ability to perceive, use, understand, and manage emotions and emotion-related information (Mayer, Caruso, & Salovey, 2016). A substantial body of work has focused on whether EI abilities can rightfully constitute a new form of "intelligence" (e.g., MacCann, Joseph, Newman, & Roberts, 2014; Mayer, Salovey, Caruso, & Sitarenios, 2001). There has been a lot less examination of the "emotional" part of emotional intelligence – the relationship of EI to people's emotional experiences. Our research addresses this need in two ways. First, we meta-analytically examine the relationship of the four ability EI branches with positive and negative affects. Second, we use experience sampling methodology (ESM) to examine the relationship of the four branches of ability EI to positive and negative affect over a 5-day period. We consider three aspects of emotional experience: (a) average levels of positive and negative affect; (b) emotion dynamics (how emotions change over time), and (c) emotional complexity (how emotions combine).

Emotional Intelligence

While some models of EI focus on emotional dispositions and emotional self-efficacy, we use the Four-Branch Ability EI Model, where EI comprises maximum-performance abilities involving knowledge and information processing of emotional stimuli and emotion-related information (Mayer et al., 2001). The four EI branches are perception, facilitation, understanding, and management. *Emotion perception* involves the ability to correctly perceive the presence and extent of emotions in the environment (e.g., perceiving emotions in people's facial expressions or tone of voice). *Emotion facilitation* involves the ability to generate the emotions most useful to the task at hand. This includes both

© 2020 Hogrefe Publishing

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

knowing which emotion would be useful for a particular situation (e.g., excitement for a big party, calmness and confidence before an exam) and being able to generate that emotion. *Emotion understanding* involves knowing how emotions combine, link to situations, and the likely time course of an emotion. *Emotion management* involves knowing which responses will be most effective for regulating one's own and other's emotions in a given situation. Some researchers believe that facilitation is a subset of management as *generating* an emotion is conceptually equivalent to *changing* (or regulating) an emotion to a more desirable one (Joseph & Newman, 2010; MacCann et al., 2014). The Four-Branch Ability EI Model is hierarchical in that lower level branch abilities are required to develop and instantiate higher-level branch abilities. For example, theoretically a person must be able to perceive and understand emotions in order to manage them (Joseph & Newman, 2010).

Relationship of Emotional Intelligence With Positive and Negative Affect

Given that the apex of EI is knowing how to regulate emotions (management), EI should relate to differences in emotional experience. Most emotion regulation is hedonic, aimed at feeling good by up-regulating positive and down-regulating negative affect (Gross, 2015). As such, high EI people should on average feel more positive and less negative affect. Two meta-analyses report that EI relates to more positive and less negative affect (Miao, Humphrey, & Qian, 2017; Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2016). However, both meta-analyses contain very little data on ability EI: $k = 1$ ($r = .14$; Sánchez-Álvarez et al.), and $k = 2$ ($r = -.06$ and $-.32$ for positive and negative affect respectively; Miao et al.). Moreover, both meta-analyses did not distinguish between the four branches of EI and Sánchez-Álvarez et al. did not distinguish between positive and negative affect. For these reasons, we believe an updated and expanded meta-analysis is needed. In addition, we wanted to examine whether EI related not just to the emotions people feel, but the way that they feel them (the way that emotions change and combine).

Study 1: Meta-Analysis

The different branches of EI are likely to show different relationships with emotions. Meta-analyses demonstrate that the branches show different relationships with job and school performance, and with emotion-related personality domains: emotional stability (encompassing low levels of trait negative affect) and extraversion (encompassing trait positive affect, but also including sociability, assertiveness, and other concepts) (Joseph & Newman, 2010; MacCann et al., 2019). Both personality domains showed the strongest positive association with management and the weakest with understanding. This is consistent with Mayer et al.'s (2001) claim that management has the strongest conceptual links to emotion, motivation, and personality. This suggests that management may show the strongest links with affect. Total EI and three of the branches (all but management) showed stronger relationships with lower neuroticism than higher extraversion. This suggests that EI may relate more strongly to lower negative than higher positive affect (in agreement with Miao et al.'s, 2017, meta-analysis). We thus make three hypotheses.

Hypothesis 1 (H1): Higher EI will relate to higher positive affect (H1a) and lower negative affect (H1b).

Hypothesis 2 (H2): Of the four branches, management will show the strongest association with both higher positive affect (H2a) and lower negative affect (H2b).

Hypothesis 3 (H3): Higher EI will relate more strongly to lower negative affect than higher positive affect.

Method

Search Strategy

The search was conducted in September 2019 using the search string "MSCEIT or MEIS or 'Mayer-Salovey-Caruso-Emotional-Intelligence-Test' or STEU or 'Situational Test of Emotion Understanding' or 'Situational Test of Emotion Management' or 'ability emotional intelligence' or 'ability EI'" for ability EI combined with the search string "'positive affect' OR 'negative affect'" for positive and negative affect. We searched PSYCInfo, Medline, and Scopus databases and located 74 articles. We checked the reference lists of the two previous meta-analyses (Miao et al., 2017; Sánchez-Álvarez et al., 2016) and added 1 reference. After removing duplicates, screening titles/abstracts, and full-text review for inclusion criteria, we had 18 articles available for meta-analysis (see Appendix and Figure 1). Four of the articles contained two studies, such that had $n = 22$ studies in total. Dong et al. (2014) reported two different measures of affect (PANAS and ESM) and we used the average estimate across the two.

Inclusion Criteria

Articles were included in the meta-analyses if they:

(1) were written in English;
(2) included an ability EI measure published in a test manual or journal article;

© 2020 Hogrefe Publishing

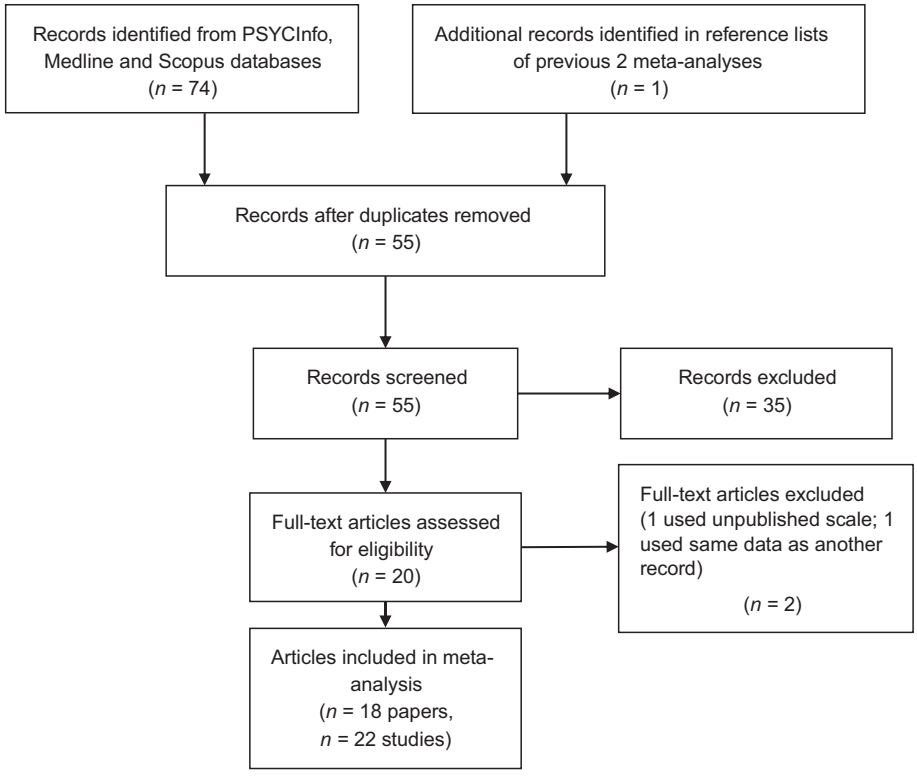


Figure 1. PRISMA flow-chart of studies included in the meta-analyses of ability EI with positive and negative affect.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

(3) included a measure of positive and/or negative affect (either a rating-scale or experience sampling procedure);
(4) used original data not reported in another article;
(5) reported an effect size between EI and positive and/or negative affect; and
(6) reported the sample size.

Coding

All records were coded independently by the first and last authors for effect size, sample size, EI instrument(s), and affect measure(s). Discrepancies were resolved by the first author checking the original article. The first author also coded the sample country, percentage of females, sample mean age, sample description, and reliability for positive affect, negative affect, and EI (where reliability was not reported, the average value across all studies was used). A table of studies and effect sizes is provided as Electronic Supplementary Material 2.

Effect size was coded as Pearson's correlation (*r*). For positive affect, coder agreement was 100% for total EI and 100%, 89%, 89%, and 100% for the four branch scores. For negative affect, agreement was 91% for total EI and 86%, 100%, 100%, and 100% for the four branch scores.

Sample size ranged from 41 to 721 with a mean of 215. Coder agreement was 82% (all coding disagreements related to small amounts of missing data).

EI instrument was predominantly the MSCEIT (n = 20). Coder agreement was 100%.

Measure of affect was mainly the PANAS (n = 16), as trait (n = 7), last 2 weeks (n = 3), past year (n = 1), right now (n = 2), unspecified (n = 2) or "at work" (n = 1). Four studies used ESM, and three used a non-PANAS rating scale. Coder agreement was 91%.

Statistical Analyses

Random-effects meta-analyses were conducted using Meta-Essentials. Ten meta-analyses were undertaken, one for each of positive and negative affect with total EI and the four branches (see Table 1). We corrected for unreliability in EI, positive affect, and negative affect before calculating confidence intervals (CIs) and significance. Both corrected correlations (ρ) and uncorrected correlations (r) are shown in Table 1. For Hypotheses 2 and 3, non-overlapping 95% confidence intervals of ρ were used to evaluate whether effects differed significantly.

Publication bias was assessed by visual inspection of funnel plots. All but two plots were symmetrical: (1) for positive affect/facilitation, three studies were "missing" from the right-hand side; (2) for positive affect/understanding, two studies were "missing" from the right-hand side. That is, a trim and fill procedure would *increase the hypothesized effect and produce a larger estimate*. We believe it is very unlikely that publication bias would result in suppressing larger effects and did not correct for bias.

 © 2020 Hogrefe Publishing

Table 1. Results of meta-analysis on the associations of ability EI with positive and negative affect (Study 1)

	k	*N*	*r*	ρ	95% $CI_ρ$	$z_ρ$	*Q*	p_Q	I^2 (%)
Positive Affect									
Total EI	11	1,895	.04	.05	−.02, .12	1.17	25.11	.005	60.17
Perception	8	1,584	.05	.06	.02, .11	2.21*	7.60	.369	7.90
Facilitation	9	1,761	.06	.07	.02, .12	2.15*	11.25	.188	28.90
Understanding	9	1,876	.00	−.01	−.10, .09	−0.13	34.55	.000	76.85
Management	14	2,813	.17	.23	.17, .29	6.26***	34.67	.001	62.51
Negative Affect									
Total EI	12	2,290	−.18	−.21	−.24, −.18	10.21***	13.88	.240	20.74
Perception[a]	7	1,830	−.17	−.21	−.24, −.17	8.87***	3.22	.781	0.00
Facilitation	7	1,830	−.17	−.21	−.27, −.15	5.54***	13.60	.030	57.02
Understanding	8	2,122	−.13	−.16	−.22, −.10	4.46***	22.53	.002	68.93
Management	11	2,700	−.17	−.22	−.27, −.16	6.48***	26.83	.003	62.73

Note. [a]A fixed-effects meta-analysis was conducted for Perception/NA, as I^2 = 0%. *p < .05, ***p < .001.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Results

Across the 22 samples, the percentage of females ranged from 21% to 86% (sample-weighted mean = 52.5%). Sample mean age ranged from 18.3 to 44.8 years (sample-weighted mean = 25.9). Study participants were drawn from eight countries (Australia, China, France, Israel, Pakistan, Spain, UK, USA) the majority from the USA (n = 12, 55%). Most studies (n = 18) comprised student samples, half from MBAs or similar degrees (n = 9), and the remainder undergraduates (n = 6) or high school students (n = 1). Other samples were workplace samples (n = 4) and community volunteers (n = 2).

Hypothesis 1: Emotional Intelligence Predicts Affect

EI was significantly correlated with lower negative affect (ρ = −.21, N = 2,290) but not higher positive affect (ρ = .05, N = 1,895), as shown in Table 1. This supports H1b but not H1a.

Hypothesis 2: Differences Among Branches

For positive affect, effect size was small to moderate for management (ρ = .23) and negligible (< .10) for perception, facilitation, and understanding (ρ = .07, .06, and −.01, respectively). The confidence interval for management (95% CI [.17, .29]) did not overlap with that of any other branch (95% CIs [.02, .11]; [.02, .12]; and [−.10, .09]) supporting H2a.

For negative affect, effect size was similar across all branches (ρ = −.21, −.21, −.16, −.22 for perception, facilitation, understanding, and management, respectively). All confidence intervals overlapped. H2b was not supported.

Hypothesis 3: Emotional Intelligence Will Relate More Strongly to Negative Than Positive Affect

To test differences between positive versus negative affect, we reversed the sign for negative affect (because effects were in different directions). For total EI, confidence intervals did not overlap for positive (95% CI [−.02, .12]) versus negative affect (95% CI [.18, .24]). This supports H3.

At the branch level, confidence intervals similarly did not overlap for perception, facilitation, and understanding branches, but did overlap for management (see Table 1).

Discussion

Our meta-analysis shows that total EI relates lower negative affect but not higher positive affect. Our results further show that all four branches of EI are associated with lower negative affect, but only emotion management is associated with positive affect at a meaningfully large magnitude. Based on these findings, we speculate that all EI abilities may be involved in the down-regulation of negative affect, but that only management is involved in the up-regulation of positive affect.

Study 2: Experience Sampling and Emotion Dynamics

While our meta-analysis showed that EI relates to mean levels of positive and negative affect, we do not know whether EI relates to the way emotions change over time or combine. Our second study addresses this, examining whether EI relates to emotion dynamics and complexity.

Much recent research on emotion and emotion regulation uses ESM to assess people's emotional experiences in daily life. This method involves obtaining multiple "samples" of a person's experience by asking for in-the-moment ratings multiple times over several days. The advantages of ESM over one-time ratings of a person's emotional state are: (1) reducing memory biases and heuristics-based

responding; (2) increasing ecological validity; and (3) the possibility of investigating within-person processes and relationships, such as the way that emotions change and combine within a person (Scollon, Kim-Prieto, & Diener, 2003).

This third point is particularly important in capturing the full range of a person's emotional experiences. Emotional experience is complex and dynamic, in that emotions can co-occur and can change over time. People differ not only in mean levels of positive or negative affect, but the ways in which their emotions change (individual differences in emotion dynamics) and combine (individual differences in emotion complexity). There are several parameters that describe these within-person dynamics and complexities, which we describe below.

Emotion Dynamics Parameters

Emotion variability represents how much an individual's emotions vary from their mean emotional state and is indexed as the within-person standard deviation. A person who experiences major highs and lows will have high variability whereas a person whose emotional life is relatively even will have low variability.

Emotion instability represents the extent to which people experience large changes in emotion from one moment to the next. Instability is theorized and observed to indicate high sensitivity to emotional events (Thompson et al., 2012; Trull, Lane, Koval, & Ebner-Priemer 2015). It is indexed as the mean of squared successive differences from one time point to the next (in the current study we take the square root of this). High variability is necessary but not sufficient for high instability. For example, high variability of anger could indicate: (a) slowly becoming extremely angry then slowly becoming calm again (low instability), or (b) changing rapidly from extremely angry to calm to extremely angry (high instability).

Emotional inertia represents the extent to which one's current emotional state is associated with one's previous emotional state (Koval & Kuppens, 2012). Inertia reflects inadequate regulatory processes that lead to less flexible emotional responses (Hollenstein, 2015; Koval et al., 2015). Some people may flexibly change emotions (low inertia), whereas others may be slow to change their emotions (high inertia). Inertia is indexed as the autocorrelation from one time point the next.

A recent meta-analysis on emotion dynamics and well-being found that well-being is associated with lower variability, instability, and inertia (Houben, Van Den Noortgate, & Kuppens, 2015). These associations were stronger for the dynamics of negative than positive emotions. This suggests that higher EI may relate to lower variability, instability, and inertia, particularly for negative emotions.

Emotion Complexity Parameters

Emotion complexity refers to how emotions are structured – how they relate to each other. We examine two constructs: emotion differentiation and emotional bipolarity.

Emotion differentiation is the extent to which one's emotions are felt and described in specific, granular terms (e.g., fear, anger, and sadness are experienced as three clearly different emotions, rather than as a single state of negative affect; Erbas, Ceulemans, Koval, & Kuppens, 2015). It is sometimes also called "emotion granularity," highlighting a distinction between fine- and course-grained distinctions about emotions (e.g., Kashdan, Barrett, & McKnight, 2015). Emotion differentiation is operationalized as the degree of covariation between similarly valanced emotions across time. The current manuscript considers emotion differentiation of three positive and six negative emotions by taking the intraclass correlation (ICC) of positive or negative emotion items, respectively (Fisher r-to-z transformed with the ICC multiplied by -1 so that higher values indicate greater differentiation).

Emotional bipolarity refers to the degree to which positive and negative affect represent opposite ends of a single pole, rather than distinct states that may be experienced independently (Dejonckheere et al., 2018). It is indexed as the within-person correlation between positive and negative affect, where more strongly negative values indicate greater bipolarity.

Emotional Intelligence and Emotion Dynamics

Perception

People high on perception should be sensitive to changes in others' emotions, detecting changes earlier and more often than those low on perception. High-perception people could thus experience: (a) larger changes in both positive and negative affect, because they are more sensitive to environmental triggers (i.e., more susceptive to emotional contagion; Hatfield, Cacioppo, & Rapson, 1993); but also (b) smaller changes in negative affect, because they detect emotional stimuli earlier and can take action before the others' emotions become intense enough to affect them (e.g., by leaving the situation). Overall then, perception may increase within-person changes in positive affect but both increase *and* decrease within-person changes in negative affect. As such, there would be increased variability and instability in positive but not negative affect.

Understanding

People with high understanding are likely to know what emotions will happen next, as they understand the ways

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

 © 2020 Hogrefe Publishing

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

that emotions change over time and the situational precursers of emotions. As such, events and emotions would be consistent with their expectations rather than surprising. Appraisals of unexpectedness increase emotional intensity (Ortony, Clore, & Collins, 1988; Sonnemans & Frijda, 1995). Because high-understanding people know when an emotion-inducing event will occur, they are less likely to feel blind-sided or caught unawares, and therefore less likely to have sudden changes in emotion. Thus, emotion understanding could lead to *less intense changes* in emotions due to lower unexpectedness. That is, understanding would be associated with decreased variability and instability in both positive and negative affect.

Management and Facilitation

We group these two branches together as facilitation is conceptually an element of management (MacCann et al., 2014). Management is the most obviously relevant branch for emotion dynamics. High-management people are better able to control which emotions they have. They can successfully regulate negative emotions as they occur, before the emotion becomes too intense. They would therefore experience lower negative affect generally and show less extreme changes (i.e., lower variability and instability of negative affect). Conversely, they may deliberately heighten their positive affect to increase their well-being, such that greater changes in positive affect are expected. Both these explanations (down-regulating negative and up-regulating positive affect) are examples of *hedonic emotion regulation*, which is widespread and commonly studied (Gross, 2015). People with good emotion management knowledge may also engage in *counter-hedonic regulation* to achieve personal or social goals (e.g., decreasing positive affect to appear more sympathetic to a grieving friend). However, this is effortful and less frequent, such that we expect the relationship between emotion management and emotion dynamics to be driven predominantly by hedonic regulation. As such, emotion management and facilitation should relate to less variability and instability in negative affect and more variability and instability in positive affect.

Total Emotional Intelligence

Given that greater within-person variability in positive affect is expected to relate positively to three of the four branches, we propose that the EI will show an overall positive association with variation in positive affect. Similarly, given that the greater within-person variability in negative affect is expected to relate negatively to three of the four branches, we proposed that EI will show an overall negative association with variation in negative affect.

In bounded emotion ratings, many emotion dynamics parameters are experimentally dependent on mean levels of emotion (Dejonckheere et al., 2019). For example, a person who experiences only low levels of negative affect (mean level = low) will also have low variability due to range restriction (variability = low) (Mestdagh et al., 2018). To disentangle emotion dynamics from mean levels, we also consider the relationship of EI to these parameters after controlling for mean levels of emotion.

Emotional Intelligence and Emotion Complexity

Higher EI individuals are more knowledgeable about the antecedents and consequences of emotions, the actions which result in changes to emotions, the utility of emotions for different tasks, and the presence of emotions around them. As such, we hypothesize that emotionally intelligent people should have a more complex structure of emotions, with greater emotion differentiation and lower bipolarity (higher bipolarity indicates less complexity because only the valence of emotions is attended to). However, because bipolarity is linked with depression and lower well-being (Dejonckheere et al., 2018), we propose that high EI people will show lower bipolarity.

Hypotheses

Hypothesis 1 (H1): EI will relate to mean levels of positive and negative affect. EI will significantly correlate with higher positive and lower negative affect (H1a). Effects will be stronger for negative than positive affect (H1b). For positive affect, effects will be significant for management only (H1c).

Hypothesis 2 (H2): EI will relate to emotion dynamics. For positive affect, EI will show significant positive correlations with variability and instability and a significant negative correlation with inertia (H2a). For negative affect, EI will show significant negative correlations with variability, instability, and inertia (H2b). For understanding, EI will show negative (rather than positive) correlations with the variability and instability of positive affect (H2c).

Hypothesis 3 (H3): EI will relate to emotion complexity. EI will show significant positive correlations with emotion differentiation of both positive and negative affect (H3a) and with the emotion bipolarity index (i.e., higher EI = lower bipolarity, as indexed by smaller within-person negative correlations of positive with negative affect; H3b).

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Method

Participants

Participants were 122 first-year psychology undergraduates from the first author's institution. They participated for course credit after signing up on the SONA research participation system (34 males, 88 females; M_{age} = 19.68 years, SD_{age} = 3.06). An additional 57 participants commenced the study but were excluded due to: (a) failing one or both data-check items (n = 14); (b) endorsing the same response for all items in two or more scales (n = 1); (c) completing the 60-minute test-battery in less than 20 min; (n = 1) (d) completing fewer than 50% of the ESM surveys (n = 18), or (e) reporting that they could not speak English "very well" (n = 23). ESM responses were excluded if the text-descriptor was random text or a participant responded to the same event more than once (if a response was within 5 min of a previous response and the text descriptor was the same). After exclusions, there were 2,336 experience samples (beeps). Participants answered between 12 and 24 beeps (M = 19.08, SD = 3.13).

Measures

Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT V2.0; Mayer, Salovey, & Caruso, 2002)

The MSCEIT is a 141-item ability test of EI with two marker tests for each branch: *Perception* (Faces, Pictures), *Facilitation* (Facilitation, Sensations), *Understanding* (Changes, Blends), and *Management* (Emotion Management, Emotional Relationships). In the present study, the MSCEIT was scored using consensus weights, consistent with the test manual.

Participants also completed other online surveys not used in this study but described in the Electronic Supplementary Material 3 (which also include more details on the MSCEIT and ESM protocol).

Experience Sampling Methodology (ESM)

Each of 24 mini-surveys first asked participants for a text-based description of the event they were experiencing, followed by ratings of appraisals (6 items), coping (9 items) and emotions (9 items). Coping and appraisals were not used in this manuscript and are described in Electronic Supplementary Material 3. Participants were asked to rate "Right now, how much do you feel?" three positive emotions (happy, contented, and enthused) and six negative emotions (frustrated, stressed, tense, sad, irritated, and anxious), from 1 (= *not at all*) to 6 (= *extremely*).

Procedure

Participants completed a 60-minute online test battery that included the MSCEIT and provided their Smartphone number. The following week, they were sent 24 SMS messages with a link to an online mini-survey. The SMS messages were sent on a random schedule over a 5-day period (Monday to Friday) using a text-messaging service.

Results

Descriptive Statistics

Mean EI scores were similar to the MSCEIT manual 18–24-year-old means for total EI (M = 0.45, SD = 0.05) and all branches: perception (M = 0.50, SD = 0.07), facilitation (M = 0.42, SD = 0.06), understanding (M = 0.50, SD = 0.06), and management (M = 0.37, SD = 0.06) (Mayer et al., 2002).

Descriptive statistics for the ESM variables are shown in Table 2. Participants felt much more positive than negative affect (M_{PA} = 3.03 vs. M_{NA} = 2.18, d = 1.16), consistent with other ESM studies (e.g., Brans, Koval, Verduyn, Lim, & Kuppens, 2013). Similarly, participants had greater variability, instability, and inertia for positive than negative affect.

Mean positive affect was not significantly correlated with variability, instability, inertia, or differentiation of positive affect (r = −.01, −.05, .07, and −.05, respectively). In contrast, mean negative affect was significantly correlated with variability, instability, inertia and differentiation of negative affect (r = .62, .52, .30, and −.37, respectively). Emotion bipolarity was significantly correlated with negative affect (r = −.19) but not positive affect (r = −.11). Intercorrelations of ESM variables are given in Electronic Supplementary Material 3.

Hypothesis Testing

Correlations of affect parameters with EI are shown in Table 2.

Hypothesis 1: Emotional Intelligence Predicts Mean Affect

Total EI was significantly correlated with negative affect (r = −.37) but not positive affect (r = .16), providing partial support for H1a. The effect size was significantly stronger for negative than positive affect (.37 vs. .16) using a z-test for dependent samples (z = 1.98, p = .048). This supports H1b and is consistent with our meta-analysis. H1c was also supported. Management was the only branch to show a significant correlation with positive affect (again, consistent with our meta-analysis).

Hypothesis 2: Emotional Intelligence Predicts Emotion Dynamics

In line with H2a, total EI was significantly positively correlated with both variability (r = .26) and instability (r = .23) in positive affect. These effects remained significant when accounting for mean levels of positive affect. Similarly, in line with H2b, EI was significantly negatively correlated with variability (r = −.21) and instability (r = −.20) in

 © 2020 Hogrefe Publishing

Table 2. Correlations of the MSCEIT total and branch scores with the ESM emotion parameters: mean, variability, instability, inertia, differentiation and bipolarity (partial correlations controlling for mean levels of emotion in parentheses; Study 2)

	Mean		Variability		Instability		Inertia		Differentiation	Bipolarity	
	PA	NA	PA	NA	PA	NA	PA	NA	PA[a]	NA[b]	$r_{PA/NA}$[a]
M	3.03	2.18	0.93	0.79	1.20	0.97	0.11	0.09	−1.15	−1.05	−0.51
SD	0.69	0.77	0.30	0.35	0.49	0.48	0.15	0.12	0.41	0.39	0.28
Tot	.16	−.37**	.26** (.22*)	−.21* (.03)	.23* (.21*)	−.20* (.00)	−.07 (−.10)	−.05 (.07)	−.21* (−.21*)	.12 (−.01)	−.21* (−.30**)
Perc	−.01	−.38**	.17 (.14)	−.12 (.17)	.19* (.16)	−.07 (.18*)	−.09 (−.09)	−.14 (−.02)	−.14 (−.14)	.10 (−.05)	−.15 (−.27**)
Fac	.15	−.39**	.28** (.26*)	−.15 (.12)	.27** (.26**)	−.16 (.06)	−.09 (−.12)	−.05 (.08)	−.20* (−.19*)	.03 (−.13)	−.20* (−.30**)
Und	.13	−.13	−.04 (−.05)	−.32** (−.31**)	−.07 (−.07)	−.34** (−.33**)	.06 (.05)	.10 (.14)	−.08 (−.08)	.19* (−.15)	−.14 (−.15)
Man	.24**	−.21*	.39** (.36**)	−.06 (.12)	.33** (.33**)	−.05 (.09)	−.10 (−.14)	−.05 (.01)	−.24** (−.24*)	.05 (−.02)	−.14 (−.16)

Note. N = 122 unless otherwise specified. Perc = Perception; Fac = Facilitation; Und = Understanding; Man = Management. *p < .05; **p < .01. [a]N = 118, [b]N = 121

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

negative affect. However, these effects decreased to non-significance after accounting for mean levels of negative effect (r = .03 and .00, respectively). EI was unrelated to inertia in either positive or negative affect.

For positive affect, branch-level correlations with variability and instability were significant and positive for facilitation (r = .28) and management (r = .39), but not perception or understanding. These effects remained significant after accounting for mean levels of positive affect (r = .26 in both cases). While understanding showed negative correlations with variability and instability (r = −.04 and −.07), these were not significant, such that H2c was not supported. Inertia was not significantly correlated with EI for any branch.

For negative affect, branch-level correlations with variability and instability were significant only for emotion understanding (r = −.32 and −.34, respectively). This effect remained significant and of moderate effect size after accounting for mean negative affect (r = −.31 and −.33, respectively). This suggests that the effect of EI on the dynamics of negative emotion occurs due to the knowledge people have of the antecedents and time course of emotions.

Hypothesis 3: Emotional Intelligence Relates to Emotion Complexity

For positive affect, emotion complexity results were in the opposite direction to hypotheses. Total EI, management, and facilitation were significantly related to *lower* differentiation of positive affect (r = −.21, −.24, and −.20, respectively). These effects remained significant after controlling for mean positive affect (r = −.21, −.24 and −.19 respectively). Effects were not significant for understanding or perception. For negative affect, emotion complexity results were in the hypothesized direction (positive correlations) but were only significant for emotion understanding (r = .19) and were not significant after controlling for mean negative affect. Hypothesis 3a was therefore not supported.

Bipolarity correlations were also in the opposite directions to hypotheses. Bipolarity was significantly negatively associated with total EI (r = −.21) and facilitation (r = −.21). After controlling for mean positive and negative affect, correlations increased, resulting in significant negative correlations for total EI, perception and facilitation (r = −.30, −.27 and −.30, respectively). Hypothesis 3b was not supported.

General Discussion

Our results show that ability EI relates to the experience of positive and negative emotions – not only mean levels but also emotion dynamics and complexity. Results were in line with our expectations for mean levels and dynamics but were in the opposite direction to expectations for emotion complexity. Both the meta-analysis and the ESM study showed that EI predicted lower negative affect and that the positive relationship of EI with positive affect was largely restricted to the management branch. EI's positive association with positive affect dynamics (greater variability and instability) was also largely restricted to management (and also facilitation, which we consider is as part of emotion management). People with higher management had more variable positive affect across the week. EI's negative association with negative affect dynamics (lower variability and instability) was largely restricted to emotion understanding. People with higher understanding had more stable levels of negative affect across the week. EI related to less differentiation of positive emotions but greater bipolarity, where we had predicted greater differentiation and lower bipolarity.

The clear differences across the four branches of EI imply different mechanisms for the way emotional abilities translate into emotional experiences. Experiencing positive affect (mean levels, dynamics, and differentiation) was

© 2020 Hogrefe Publishing

clearly driven by management (and the related branch, facilitation). This implies that EI links to positive affect through deliberate regulation of positive affect, rather than greater sensitivity to emotional cues (as a perception/positive affect link would imply). This differed for negative affect – the meta-analysis showed that the EI/negative affect link held for perception as well as management and facilitation, and was weakest for understanding (i.e., sensitivity to emotional cues is important for negative but not positive affect). However, understanding (but not the other branches) predicted lower variability and instability. In the introduction, we proposed that the understanding/variability link should occur through an appraisal-based pathway where appraised unexpectedness would be lower for high understanding individuals. Future research could test this possible mechanism by testing whether appraisals of unexpectedness mediate the within- and between-person relationships of emotion understanding with changes in negative affect. Given the distinct pattern of findings for different branches of EI, future research might also examine additional EI facets such as emotion attention regulation (the ability to direct attention toward or away from emotional content; Elfenbein & MacCann, 2017).

The associations of EI with *lower* differentiation of positive emotions and *higher* emotion bipolarity were unexpected, as higher bipolarity and lower differentiation are linked with poorer psycho-social outcomes (Dejonckheere et al., 2018; Kashdan et al., 2015). We hypothesized the opposite – that EI would link to *lower* bipolarity and *higher* differentiation. We propose two reasons for the unexpected positive relationship of EI to emotion differentiation. First, differentiating positive emotions differs from differentiating negative emotions. Prior research (the basis for our hypotheses) focused mainly on differentiating among negative emotions (Kashdan et al.). However, effects may not hold for positive emotions. For example, Demiralp et al. (2012) found that depressed people showed less differentiation of negative but not positive emotions. EI linked only to positive emotion differentiation only, which is not inconsistent with prior research.

Second, Erbas et al. (2019) found differences for between-category differentiation (differentiating between basic emotions such as fear anger and sadness) versus within-category differentiation (differentiating between variants of a basic emotion, such as anger, irritation, and annoyance). Well-being related to higher between-category but lower within-category differentiation. In our study, some item pairs were within-category ("tense," "anxious"), but others were between-category ("irritated," "sad"). High-EI people may give similar ratings to within-category adjectives due to a better emotion vocabulary (high EI = lower within-category differentiation). However, high-EI people may give different ratings to different basic emotions due to better ability to identify their emotions (high EI = higher between-category differentiation). We may thus have two different mechanisms (emotion word knowledge, awareness of differing emotional states) linking EI with emotion differentiation but working in different directions. Better emotion word knowledge may also partly explain the unexpected bipolarity results. Specifically, some emotion word pairs were virtually antonyms (e.g., happy, sad) such that a higher negative correlation with EI could represent a better emotion vocabulary.

Limitations and Future Directions

To reiterate, including synonym and antonym emotion adjectives in the ESM may mean that lower differentiation and higher bipolarity linked to a better emotion vocabulary. Excluding synonyms/antonyms and distinguishing within- and between-category differentiation in future research may produce different correlations with EI (we did not have enough emotion terms to do this in the current study). Further, is unclear whether our operationalization of emotions dynamics represented sensitivity to environmental changes, internal physiological changes (e.g., chronicity, seizures) or neither (were random). Future research could collect physiological and contextual data alongside affect ratings to help to clarify the meaning of emotion dynamics.

Another possible limitation is our undergraduate sample – younger adults feel more intense emotions and use more emotion regulation strategies (Grühn, Kotter-Grühn, & Röcke, 2010; Nolen-Hoeksema, & Aldao, 2011). Greater emotions and regulation in young adults may also involve greater dynamics and complexity, such that results may not generalise to a different population or context. In fact, Dong, Seo, and Bartol (2014) found no significant relationship for total EI with emotion variability for either positive or negative affect at work. Although differences could be due to the frequency of sampling (once a day for Dong et al. vs. four or five times a day in the current study), they may also be due to differences in the population and context.

Conclusion

Our results show that EI relates not only to how much emotion people feel but also the way their emotions change and combine. Results differ for positive and negative affect and across the EI branches, emphasizing the importance of considering the different parts of EI for different criteria. For example, EI training programs aimed at building positive well-being might focus on emotion management, whereas programs aimed at reducing anxiety and stress, and the quick swings to negative emotions might also need to include emotion understanding.

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

 © 2020 Hogrefe Publishing

Electronic Supplementary Materials

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/1015-5759/a000588

1. Raw data for Study 2
2. MA codebook
3. More details and correlation table

References

Brans, K., Koval, P., Verduyn, P., Lim, Y. L., & Kuppens, P. J. E. (2013). The regulation of negative and positive affect in daily life. *Emotion, 13*, 926–939. https://doi.org/10.1037/a0032400

Dejonckheere, E., Mestdagh, M., Houben, M., Erbas, Y., Pe, M., Koval, P., … Kuppens, P. (2018). The bipolarity of affect and depressive symptoms. *Journal of Personality and Social Psychology, 114*, 323–341. https://doi.org/10.1037/pspp0000186

Dejonckheere, E., Mestdagh, M., Houben, M., Rutten, I., Sels, L., Kuppens, P., & Tuerlinckx, F. (2019). Affect dynamics show little incremental association with psychological well-being across individuals. *Nature Human Behaviour, 3*, 478–491. https://doi.org/10.1038/s41562-019-0555-0

Demiralp, E., Thompson, R. J., Mata, J., Jaeggi, S. M., Buschkuehl, M., Barrett, L. F., … Gotlib, I. H. (2012). Feeling blue or turquoise? Emotional differentiation in major depressive disorder. *Psychological Science, 23*, 1410–1416. https://doi.org/10.1177/0956797612444903

Dong, Y., Seo, M. G., & Bartol, K. M. (2014). No pain, no gain: An affect-based model of developmental job experience and the buffering effects of emotional intelligence. *Academy of Management Journal, 57*, 1056–1077. https://doi.org/10.5465/amj.2011.0687

Elfenbein, H. A., & MacCann, C. (2017). A closer look at ability emotional intelligence (EI): What are its component parts, and how do they relate to each other? *Social and Personality Psychology Compass, 11*, e12324. https://doi.org/10.1111/spc3.12324

Erbas, Y., Ceulemans, E., Blanke, E. S., Sels, L., Fischer, A., & Kuppens, P. (2019). Emotion differentiation dissected: Between-category, within-category, and integral emotion differentiation, and their relation to well-being. *Cognition and Emotion, 33*, 258–271. https://doi.org/10.1080/02699931.2018.1465894

Erbas, Y., Ceulemans, E., Koval, P., & Kuppens, P. (2015). The role of valence focus and appraisal overlap in emotion differentiation. *Emotion, 15*, 373–382. https://doi.org/10.1037/emo0000039

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry, 26*, 1–26. https://doi.org/10.1080/1047840X.2014.940781

Grühn, D., Kotter-Grühn, D., & Röcke, C. (2010). Discrete affects across the adult lifespan: Evidence for multidimensionality and multidirectionality of affective experiences in young, middle-aged and older adults. *Journal of Research in Personality, 44*, 492–500. https://doi.org/10.1016/j.jrp.2010.06.003

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. *Current Directions in Psychological Science, 2*, 96–100. https://doi.org/10.1111/1467-8721.ep10770953

Hollenstein, T. (2015). This time, it's real: Affective flexibility, time scales, feedback loops, and the regulation of emotion. *Emotion Review, 7*, 308–315. https://doi.org/10.1177/1754073915590621

Houben, M., Van Den Noortgate, W., & Kuppens, P. J. P. (2015). The relation between short-term emotion dynamics and psychological well-being: A meta-analysis. *Psychological Bulletin, 141*, 901. https://doi.org/10.1037/a0038822

Joseph, D. L., & Newman, D. A. (2010). Emotional intelligence: An integrative meta-analysis and cascading model. *Journal of Applied Psychology, 95*, 54–78. https://doi.org/10.1037/a0017286

Kashdan, T. B., Barrett, L. F., & McKnight, P. E. (2015). Unpacking emotion differentiation: Transforming unpleasant experience by perceiving distinctions in negativity. *Current Directions in Psychological Science, 24*, 10–16. https://doi.org/10.1177/0963721414550708

Koval, P., Brose, A., Pe, M. L., Houben, M., Erbas, Y., Champagne, D., & Kuppens, P. (2015). Emotional inertia and external events: The roles of exposure, reactivity, and recovery. *Emotion, 15*, 625–636. https://doi.org/10.1037/emo0000059

Koval, P., & Kuppens, P. (2012). Changing emotion dynamics: Individual differences in the effect of anticipatory social stress on emotional inertia. *Emotion, 12*, 256–267. https://doi.org/10.1037/a0024756

MacCann, C., Jiang, Y., Brown, L. E. R., Double, K. S., Bucich, M., & Minbashian, A. (2019). Emotional intelligence predicts academic performance: A meta-analysis. *Psychological Bulletin*,. Advance online publication. https://doi.org/10.1037/bul0000219

MacCann, C., Joseph, D. L., Newman, D. A., & Roberts, R. D. (2014). Emotional intelligence is a second-stratum factor of intelligence: Evidence from hierarchical and bifactor models. *Emotion, 14*, 358–374. https://doi.org/10.1037/a0034755

Mayer, J. D., Caruso, D. R., & Salovey, P. J. (2016). The ability model of emotional intelligence: Principles and updates. *Emotion Review, 8*, 290–300. https://doi.org/10.1177/1754073916639667

Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) user's manual*. New York, NY: Multi-Health Systems.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2001). Emotional intelligence as a standard intelligence. *Emotion, 1*, 232–242. https://doi.org/10.1037/1528-3542.1.3.232

Mestdagh, M., Pe, M., Pestman, W., Verdonck, S., Kuppens, P., & Tuerlinckx, F. (2018). Sidelining the mean: The relative variability index as a generic mean-corrected variability measure for bounded variables. *Psychological Methods, 23*, 690–707. https://doi.org/10.1037/met0000153

Miao, C., Humphrey, R. H., & Qian, S. (2017). A meta-analysis of emotional intelligence and work attitudes. *Journal of Occupational and Organizational Psychology, 90*, 177–202. https://doi.org/10.1111/joop.12167

Nolen-Hoeksema, S., & Aldao, A. (2011). Gender and age differences in emotion regulation strategies and their relationship to depressive symptoms. *Personality and Individual Differences, 51*, 704–708. https://doi.org/10.1016/j.paid.2011.06.012

Ortony, A., Clore, G. L., & Collins, A. (1988). *The cognitive structure of emotions*. Cambridge, UK: Cambrigde University Press.

Sánchez-Álvarez, N., Extremera, N., & Fernández-Berrocal, P. J. (2016). The relation between emotional intelligence and subjective well-being: A meta-analytic investigation. *The Journal of Positive Psychology, 11*, 276–285. https://doi.org/10.1080/17439760.2015.1058968

Scollon, C. N., Kim-Prieto, C., & Diener, E. (2003). Experience sampling: Promises and pitfalls, strengths and weaknesses. *Journal of Happiness Studies, 4*, 5–34. https://doi.org/10.1023/A:1023605205115

Sonnemans, J., & Frijda, N. H. (1995). The determinants of subjective emotional intensity. *Cognition and Emotion, 9*, 483–506. https://doi.org/10.1080/02699939508408977

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Thompson, R. J., Mata, J., Jaeggi, S. M., Buschkuehl, M., Jonides, J., & Gotlib, I. H. (2012). The everyday emotional experience of adults with major depressive disorder: Examining emotional instability, inertia, and reactivity. *Journal of Abnormal Psychology, 121*, 819–829. https://doi.org/10.1037/a0027978

Trull, T. J., Lane, S. P., Koval, P., & Ebner-Priemer, U. W. (2015). Affective dynamics in psychopathology. *Emotion Review, 7*, 355–361. https://doi.org/10.1177/1754073915590617

History
Received April 19, 2019
Revision received January 18, 2020
Accepted January 21, 2020
Published online June 26, 2020
EJPA Section/Category Positive Psychology and Assessment

Funding
This research was supported by Australian Research Council Discovery grant DP150101158, by KU Leuven Research Council grants GOA/15/003 and C14/19/054, and by a Research Foundation Flanders (FWO) Post-doctoral Fellowship that supports Y. Erbas.

ORCID
Carolyn McCann
https://orcid.org/0000-0001-7789-6368

Carolyn MacCann
School of Psychology
University of Sydney
Sydney, NSW 2037
Australia
carolyn.maccann@sydney.edu.au

This document is copyrighted by the American Psychological Association or one of its allied publishers.
This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

Appendix

References Used in the Meta-Analysis

*Brackett, M. A., Palomera, R., Mojsa-Kaja, J., Reyes, M. R., & Salovey, P. (2010). Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers. *Psychology in the Schools, 47*, 406–417. https://doi.org/10.1002/pits.20478

*Burrus, J., Betancourt, A., Holtzman, S., Minsky, J., MacCann, C., & Roberts, R. D. (2012). Emotional intelligence relates to well-being: Evidence from the Situational Judgment Test of Emotional Management. *Applied Psychology-Health and Well Being, 4*, 151–166. https://doi.org/10.1111/j.1758-0854.2012.01066.x

*Di Fabio, A., & Kenny, M. E. (2016). Promoting well-being: The contribution of emotional intelligence. *Frontiers in Psychology, 7*, 1182. https://doi.org/10.3389/fpsyg.2016.01182

*Dong, Y., Seo, M. G., & Bartol, K. M. (2014). No pain, no gain: An affect-based model of developmental job experience and the buffering effects of emotional intelligence. *Academy of Management Journal, 57*, 1056–1077. https://doi.org/10.5465/amj.2011.0687

*Elfenbein, H. A., Barsade, S. G., & Eisenkraft, N. (2015). The social perception of emotional abilities: Expanding what we know about observer ratings of emotional intelligence. *Emotion, 15*, 17–34. https://doi.org/10.1037/a0038436

*Elfenbein, H. A., Curhan, J. R., Eisenkraft, N., Shirako, A., & Baccaro, L. (2008). Are some negotiators better than others? Individual differences in bargaining outcomes. *Journal of Research in Personality, 42*, 1463–1475. https://doi.org/10.1016/j.jrp.2008.06.010

*Extremera, N., & Rey, L. (2016). Ability emotional intelligence and life satisfaction: Positive and negative affect as mediators. *Personality and Individual Differences, 102*, 98–101. https://doi.org/10.1016/j.paid.2016.06.051

*Karim, J., & Weisz, R. (2010). Cross-cultural research on the reliability and validity of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). *Cross-Cultural Research, 44*, 374–404. https://doi.org/10.1177/1069397110377603

*Kirk, B. A., Schutte, N. S., & Hine, D. W. (2008). Development and preliminary validation of an emotional self-efficacy scale. *Personality and Individual Differences, 45*, 432–436. https://doi.org/10.1016/j.paid.2008.06.010

*Lopes, P. N., Grewal, D., Kadis, J., Gall, M., & Salovey, P. (2006). Evidence that emotional intelligence is related to job performance and affect and attitudes at work. *Psicothema, 18*, 132–138. Retrieved from http://www.psicothema.com/english/psicothema.asp?id=3288

*Megías, A., Gómez-Leal, R., Gutiérrez-Cobo, M. J., Cabello, R., & Fernández-Berrocal, P. (2018). The relationship between aggression and ability emotional intelligence: The role of negative affect. *Psychiatry Research, 270*, 1074–1081. https://doi.org/10.1016/j.psychres.2018.05.027

*Minbashian, A., Beckmann, N., & Wood, R. E. (2018). Emotional intelligence and individual differences in affective processes underlying task-contingent conscientiousness. *Journal of Organizational Behavior, 39*, 1182–1196. https://doi.org/10.1002/job.2233

*Mueller, J. S., & Curhan, J. R. (2006). Emotional intelligence and counterpart mood induction in a negotiation. *International Journal of Conflict Management, 17*, 110-128. https://doi.org/10.1108/10444060610736602

*Parke, M. R., Seo, M. G., & Sherf, E. N. (2015). Regulating and facilitating: The role of emotional intelligence in maintaining and using positive affect for creativity. *Journal of Applied Psychology, 100*, 917–934. https://doi.org/10.1037/a0038452

*Rode, J. C., Mooney, C. H., Arthaud-Day, M. L., Near, J. P., Rubin, R. S., Baldwin, T. T., & Bommer, W. H. (2008). An examination of the structural, discriminant, nomological, and incremental predictive validity of the MSCEIT© V2.0. *Intelligence, 36*, 350–366. https://doi.org/10.1016/j.intell.2007.07.002

*Webb, C. A., Schwab, Z. J., Weber, M., DelDonno, S., Kipman, M., Weiner, M. R., & Killgore, W. D. S. (2013). Convergent and divergent validity of integrative versus mixed model measures of emotional intelligence. *Intelligence, 41*, 149–156. https://doi.org/10.1016/j.intell.2013.01.004

*Zeidner, M., & Hadar, D. (2014). Some individual difference predictors of professional well-being and satisfaction of health professionals. *Personality and Individual Differences, 65*, 91–95. https://doi.org/10.1016/j.paid.2014.01.032

*Zhao, J. L., Li, X. H., & Shields, J. (2019). Managing job burnout: The effects of emotion-regulation ability, emotional labor, and positive and negative affect at work. *International Journal of Stress Management, 26*, 315–320. https://doi.org/10.1037/str0000101

 © 2020 Hogrefe Publishing