



## **Improving Emotion Perception and Emotion Regulation Through a Web-Based Emotional Intelligence Training (WEIT) Program for Future Leaders**

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We evaluated a Web-Based Emotional Intelligence Training (WEIT) program that was based on the four-branch model of emotional intelligence (EI) and which aimed at improving emotion perception (EP) and emotion regulation (ER) in future leaders. Using a controlled experimental design, we evaluated the short-term (directly after the WEIT program) and long-term (6 weeks later) effects in a sample of 134 (59 training group [TG], 75 wait list control group [CG]) business students, and additionally tested whether WEIT helped to reduce perceived stress. For EP, WEIT led to a significant increase in the TG directly after training (whereas the wait list CG showed no change). Changes remained stable after 6 weeks in the TG, but there were no significant differences between the TG and CG at follow-up. By contrast, ER did not show an increase directly after WEIT, but 6 weeks later, the TG had larger improvements than the CG. The results mostly confirmed that emotional abilities can be increased through web-based training. Participants' perceived stress did not decrease after the training program. Further refinement and validation of WEIT is needed.

**Keywords:** emotional intelligence, web-based training, stress, future leaders

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### **Introduction**

Emotional intelligence (EI) has attracted considerable attention in recent years (see Côté, 2014). Studies have shown that it is related to important work outcomes such as job performance (e.g., O'Boyle, Humphrey, Pollack, Hawver, & Story, 2011) and leadership emergence (Côté, Lopes, Salovey, & Miners, 2010) and effectiveness (Rosete & Ciarrochi, 2005). People high in EI have better subjective well-being (Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2016) and health (Martins, Ramalho, & Morin, 2010). The

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association of EI with better health is especially important for leaders because of their challenging work demands (e.g., Hambrick, Finkelstein, & Mooney, 2005).

Owing to increasingly complex work environments, the personnel development practices of organizations have changed. Web-based training (WBT) is one of practices on the rise to enhance job-relevant competencies (Erpenbeck, Sauter, & Sauter, 2015). For example, 70% of the e-learning experts in German-speaking companies stated that WBT will become more important in the coming years (Institut für Medien- und Kompetenzforschung, 2018). However, whereas studies have already shown that EI can be enhanced through face-to-face training (e.g., Hodzic, Scharfen, Ripoll, Holling, & Zenasni, 2018), it has not been determined whether EI can be improved through WBT. Moreover, studies that have evaluated EI training directed at leaders are still rare (cf. Slaski & Cartwright, 2003). To address this gap, we designed and evaluated a WBT program to increase EI in future leaders—the Web-Based Emotional Intelligence Training (WEIT) program.

Evaluations of EI training have been subject to criticism such as training programs often missing a clear theoretical basis, focused only on short-term changes but not on long-term ones, have not used control groups, and have rarely used performance-based measures of EI (Schutte, Malouff, & Thorsteinsson, 2013). In the present study, WEIT is based on a clear theoretical background and methods that have been shown to foster a sustainable impact. Secondly, we used an experimental design in which participants were randomly assigned to either a training group or a wait list control group. We also tested for sustainability by administering a follow-up test 6 weeks after WEIT. Finally, instead of relying on self-reported EI measures, we administered a performance-based test to measure EI.

### *EP and ER as Core Abilities in the Workplace*

Ability models of EI suggest that EI is an ability that develops over time (e.g., Salovey & Mayer, 1990) and that it can be developed through training. Therefore, WEIT was based on the idea that EI is a competence that can be improved through training. WEIT is based on Mayer and Salovey's (1997) four-branch model of EI, which distinguishes four abilities, namely perceiving emotions, using emotions, understanding emotions, and regulating emotions. More recent research showed that the ability to use emotions overlaps with the other abilities and supports a three-factor model (Joseph & Newman, 2010). The third branch of the model has been criticized for being rather cognitively saturated and close to verbal intelligence (Schütz & Koydemir, 2018). Thus, perceiving and regulating emotions are often considered the most relevant aspects of EI when it comes to training (Herpertz, 2016). Besides, applied research has shown that it is especially perceiving (EP) and regulating emotions (ER) that are particularly relevant to work-related situations (Schütz & Koydemir, 2018). Leaders in particular tend to benefit from good EP and ER abilities because their daily tasks require emotional labor (Humphrey, Ashforth, & Diefendorff, 2015).

Perceiving emotions is considered the most basic aspect of EI and encompasses the ability to identify emotions in others' faces, voices, and behavior (EP in others) and the ability to be aware of one's own emotions (EP in oneself). Farh, Seo, and Tesluk (2012) showed that the ability to perceive emotions was

positively associated with job performance in jobs with a high level of managerial demands. Nizielski, Hallum, Schütz, and Lopes (2013) also found that the perceived ability to adequately recognize emotions in oneself and others is related to reduced burnout. In general, leaders and their employees have been found to benefit from leaders' well-being because exhausted leaders have been found to engage in less positive leadership such as health-promoting behaviours (Köppe, Kammerhoff, & Schütz, 2018) but more negative leadership behavior such as abusive supervision (Harms, Credé, Tynan, Leon, & Jeung, 2017). Finally, Rubin, Munz, and Bommer (2005) found that leaders with high EP abilities engaged in more transformational leadership behavior than others, including communicating a vision or setting ambitious work goals. In turn, transformational leadership is associated with various positive outcomes such as employee performance (Wang, Oh, Courtright, & Colbert, 2011) and well-being (Skakon, Nielsen, Borg, & Guzman, 2010).

ER is considered the most complex EI ability. It comprises the ability to manage both positive and negative emotions in oneself and others by selecting and applying adequate ER strategies (Mayer & Salovey, 1997). Effective ER strategies include shifting attention, cognitive reappraisal, or communicating one's feelings (Gross, 1998, 2002). This ability is essential to leaders who frequently need to deal with their own and others' emotions. In this respect, performance-based ER was found to be positively associated with job performance, and this was particularly true for high emotional labor jobs (Newman, Joseph, & MacCann, 2010). People who are good at managing emotions have fewer conflicts (Lopes et al., 2011) and better relationships (e.g., Lopes, Brackett, Nezlek, Schütz, Sellin, & Salovey, 2004). Positive leader-employee relationships (Graen & Uhl-Bien, 1995) are associated with various positive work-related outcomes (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012).

Altogether, previous research has underscored the idea that the abilities to perceive and regulate emotions both play important roles in successful leadership and are thus important to develop amongst leaders in work organisations. Consequently, we designed a training program that was aimed at enhancing the 'core' aspects of EI (i.e., EP and ER) in future leaders.

#### *Improving EP and ER through WEIT*

In recent years, several studies have demonstrated that EI can be improved through face-to-face training, especially when based on ability models of EI (Hodzic et al., 2018). However, studies that have focused on leaders as a target group have been rare (Slaski & Cartwright, 2003). Moreover, earlier EI training programs for leaders did not take into account the requirements of a leadership position such as local and temporal flexibility. Thus, we developed a relatively short WBT program in which individuals were able to participate when and where it suited them best. In addition, the web-based format allows organizations to save a significant amount of money by cutting costs for travel, accommodation, and by reaching a virtually unlimited number of individuals (Kimiloglu, Ozturan, & Kutlu, 2017).

To our knowledge, no previous studies have investigated the effectiveness of EI training delivered online (cf. Jung et al., 2016). However, there are studies that have shown the effectiveness of online

interventions aimed at enhancing self-efficacy (Ouweneel, Le Blanc, & Schaufeli, 2013), mindfulness (Spijkerman, Pots, & Bohlmeijer, 2016), or stress management (Heber et al., 2017). These concepts partially overlap with EI with respect to aspects such as self-awareness, empathy, or positive thinking. This is why we were confident that EI can be trained online. In line with this reasoning, we hypothesized first that WEIT will lead to an increase in participants' EP and ER abilities as measured directly after the intervention (short-term effects), and secondly that the WEIT impact will remain stable over time (6 weeks after the end of the intervention).

In this study, we also investigated whether WEIT could also help to reduce perceived stress in future leaders. Feeling healthy is particularly important for leaders to be able to perform well and interact with employees in a supportive manner. A recent study by Köppe et al. (2018) showed that exhausted leaders attended less to the health of their employees, who in turn manifested more somatic complaints. On the other hand, EI is related to subjective well-being (Sánchez-Álvarez et al., 2016). Furthermore, studies have shown that face-to-face EI training can decrease stress (e.g., Kotsou, Nelis, Grégoire, & Mikolajczak, 2011), and a recent meta-analysis by Heber et al. (2017) found that WBT is appropriate for reducing stress. We therefore hypothesized that WEIT will reduce stress directly after the intervention and that the effect will remain stable over time (6 weeks after the end of the intervention).

## **Methodology**

### *Procedure*

Students from business administration and management or business-related studies from different German universities were recruited through various ways such as flyers and mailing lists. Participants registered for the training program via e-mail and were randomly assigned to the training group (TG) or waiting group (CG). Participants completed an online battery of tests before the intervention (Time 1, pretest), directly after the intervention (Time 2, posttest), and 6 weeks later (Time 3, follow-up). The wait list control group completed the three online surveys parallel to the TG and started WEIT after they had completed the follow-up test. WEIT consisted of four consecutive modules spread over four working days. Once a participant had completed all four modules, a four-week online practice period began. As an incentive for their participation, participants in both the TG and CG were offered a training certificate and a detailed analysis of their EI.

### *Participants*

Participants were university students from business or business-related studies because these groups are likely to hold leadership positions in organizations later on. A total of 197 students participated in the study with 190 students yielding full and reproducible sets of data at Time 1. Of these, 134 students ( $n = 59$  in the TG,  $n = 75$  in the CG) completed both the pretest and posttest, and their data were thus used in the analyses of short-term effects. The dropout rate from Time 1 to Time 2 was 29.47%. Participants who did not complete the posttest, did not differ significantly in gender,  $\chi^2 = 1.56$ ,  $p = .21$ ; age,  $t(188) = -0.92$ ,  $p = .36$  or the relevant study variables measured at Time 1 (MSCEIT EP,  $t(188) = 1.22$ ,  $p = .23$ ; MSCEIT ER,  $t(188) =$

0.75,  $p = .45$ ; Irritation,  $t(188) = 1.21, p = .23$ ). Dropout was larger in the TG ( $n = 38$ ) than in the CG ( $n = 18$ ). A total of 110 students ( $n = 49$  in the TG and  $n = 61$  in the CG) had complete data at all three time points, and thus, their data could be used in the analyses of long-term effects (follow up study). Dropout rates between Times 2 and 3 (12.63% in total) were comparable between the two groups ( $n = 10$  in the TG and  $n = 14$  in the CG). Participants who did not complete the follow-up test, did not differ significantly in age,  $t(132) = -0.19, p = .85$  or the relevant study variables measured at Time 2. However, there were significant differences between the two groups in gender,  $\chi^2 = 7.41, p = .01$ ; more females than males completed both posttest and follow-up test.

Out of the 134 participants who were included in the analyses of short-term effects, there were 83 females and 51 males with a mean age of 26.66 ( $SD = 5.69$ ). Only 36 (26.9%) students reported that they had previous experiences with WBT. More precisely, 19 participants in the TG reported previous experience with WBT, and 17 participants in the CG reported this kind of experience ( $\chi^2 = 1.53, p = .22$ ). However, no participant indicated having previous e-learning experience in EI. There were no other significant differences between the groups in gender,  $\chi^2 = 0.83, p = .36$ ; age,  $t(132) = -0.96, p = .34$ ; field of study,  $\chi^2 = 2.89, p = .43$ ; or graduation,  $\chi^2 = 0.62, p = .43$ .

### *The WEIT program*

WEIT builds on the empirically validated 1-day face-to-face training program EMO-TRAIN (Herpertz & Schütz, 2016; Herpertz, Schütz, & Nezelek, 2016). WEIT consisted of a pre-assignment task, the actual WEIT, which comprised four one-hour modules, and a four-week online practice period and included the four consecutive modules, namely EP in others, EP in the self, ER in the self, and ER in others. At the beginning of each module, basic information was presented. Various methods such as video clips, audio files, or drag and drop exercises were then used to create active learning experiences (Erpenbeck et al., 2015). Each module concluded with a multiple-choice quiz and a homework assignment.

In the first module, participants primarily learned about theories of basic emotions and how to recognize and distinguish between emotions on the basis of facial cues. In the second module, participants viewed brief scenarios that demonstrated the links between specific situations, cognitive evaluations of the situation, and the development of emotions. The main focus of the third module was on the downregulation of negative emotions and the preservation, reinforcement, and upregulation of positive emotions. Gross' (1998) process model of ER was used as a theoretical foundation. Participants had the opportunity to read about and practice different ER strategies. In the fourth module participants were familiarized with the concept of nonviolent communication by Rosenberg (2010). Video clips were also used to demonstrate negative and positive examples of how to communicate in a constructive manner.

Different methods were used to enhance the transfer effect of WEIT. The pre-assignment task enabled participants to use their personal experiences during training, with reality-based exercises to increase participants' training motivation and sustainability. Multiple-choice questions, homework assignments, and

goal setting exercises aimed at further strengthening the impact of WEIT. A four-week online practice period was designed to consolidate key aspects of every module through a condensed assignment for each week.

### *Measures*

The following measures were used three times: prior to the intervention (Time 1), directly after the intervention (Time 2), and 6 weeks later (Time 3).

*MSCEIT EP/MSCEIT ER.* The German version of the MSCEIT (Steinmayr, Schütz, Hertel, & Schröder-Abé, 2011) was used to measure the ability to perceive emotions (MSCEIT EP) as well as the ability to regulate emotions (MSCEIT ER) in oneself and others. Previous research has successfully applied the MSCEIT to evaluate EI training effects (e.g., Herpertz et al., 2016). EP was assessed using the subtasks faces and images in which participants were asked to use a 5-point scale (1 = *no/not at all*, 5 = *extreme/very strong*) to rate the degree to which an emotion was expressed in an image of a face or a picture of a landscape or an abstract pattern. ER was measured through the subtasks emotion management (ER in oneself) and social management (ER in others). In both tasks, hypothetical scenarios were presented and participants were asked to rate the effectiveness of various strategies in attaining or maintaining a specific emotional state on a 5-point scale (1 = *very ineffective*, 5 = *very effective*). Standard values for EP and ER were calculated by applying the consensus scoring method. Reliability analyses revealed Cronbach's alpha coefficients that varied from .89 to .92 for EP and from .53 to .67 for ER across the three time points. Previous studies have shown evidence for criterion validity, discriminant validity and incremental validity in predicting social deviance, alcohol use, and academic achievement (Schütz & Koydemir, 2018).

*Irritation Scale* (Mohr and Rigotti, 2014). The Irritation Scale distinguishes between emotional (Subscale 1) and cognitive (Subscale 2) stress. Emotional stress (e.g., "When I come home from class, I feel rather nervous") was assessed with five items; cognitive stress was assessed with three items (e.g., "After class, it is difficult for me to calm down"). Items were scored on a 7-point scale (1 = *not at all true*, 7 = *completely true*). Previous studies had confirmed the reliability and validity of the scale (Mohr, Rigotti, & Müller, 2005). The internal consistencies in the present study were  $\alpha = .78$  (Time 1),  $\alpha = .83$  (Time 2), and  $\alpha = .82$  (Time 3).

### *Analysis*

All analyses were performed with SPSS version 24. To test for baseline differences between the TG and the CG, we computed independent *t* tests. However, preliminary analyses revealed that the data violated the assumption of normality (i.e., most of the variables were negatively skewed). In order to deal with the lack of normality, we transformed the data by applying a reverse score square root transformation (Field, 2013). This transformation also reversed the interpretation of the results. Further analyses showed that the TG and the CG differed only on the irritation variable; The TG reported higher stress than the CG (see Table I).

**Table I. Means, Standard Deviations, and Significant Differences between the TG and CG prior to the intervention**

	TG ( <i>n</i> = 59)		CG ( <i>n</i> = 75)		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
<b>MSCEIT EP</b>	4.28	1.47	4.46	1.66	-0.65	.51
<b>MSCEIT ER</b>	4.77	1.41	4.81	1.29	-0.14	.89
<b>Irritation</b>	1.71	0.33	1.59	0.25	2.31	.02

*Note.* *N* = 134. Due to a reverse score square root transformation, the interpretation of the variables was reversed.

We calculated 2 x 3 mixed analyses of variance (ANOVAs) for each dependent variable with group (TG vs. CG) as a between-subjects factor and time (pretest, posttest, follow-up test) as a within-subjects factor to test for short-term (Time 1 vs. Time 2) and long-term effects (Time 2 vs. Time 3). In each case, a significant Group x Time interaction would indicate differential change between the two groups. Moreover, dependent *t* tests were computed to detect significant changes (i.e., improvement) in the variables in the TG.

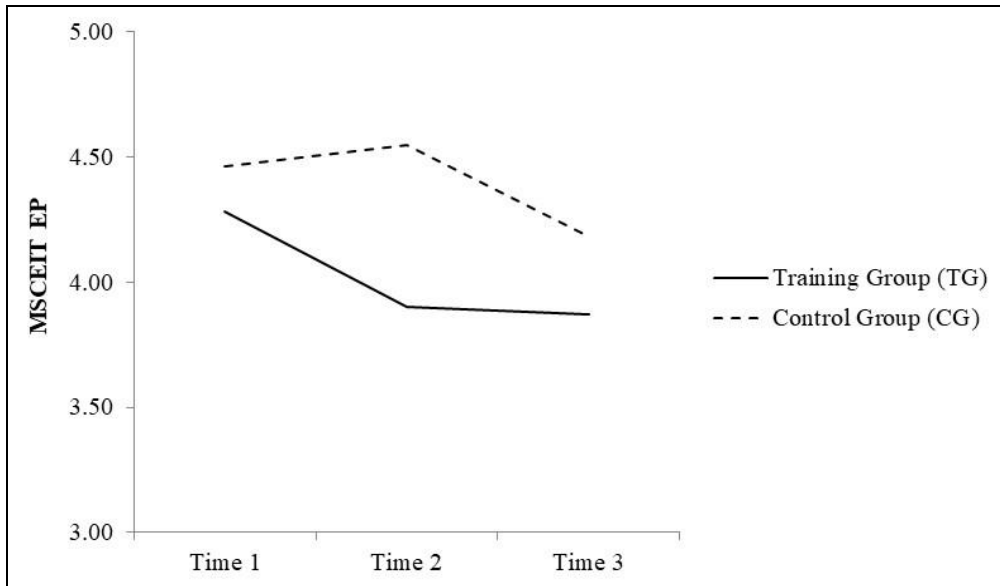
## Results

### *EI changes*

The means, standard deviations, and the differences between Time 1, Time 2, and Time 3 for each variable and each group are shown in Tables II and III. The analyses showed a significant Group x Time interaction for the MSCEIT EP,  $F(1, 132) = 4.40, p = .04$ , which partially supported Hypothesis 1a. In comparison with the CG, the TG showed a significant decrease for the MSCEIT EP between Times 1 and 2 (Table II), representing an improvement of the ability to perceive emotions in oneself and others. No significant interaction was found for the MSCEIT ER,  $F(1, 132) = 0.08, p = .78$ . Neither the TG nor the CG showed a significant difference between Times 1 and 2 in the ER branch of the MSCEIT (Table II).

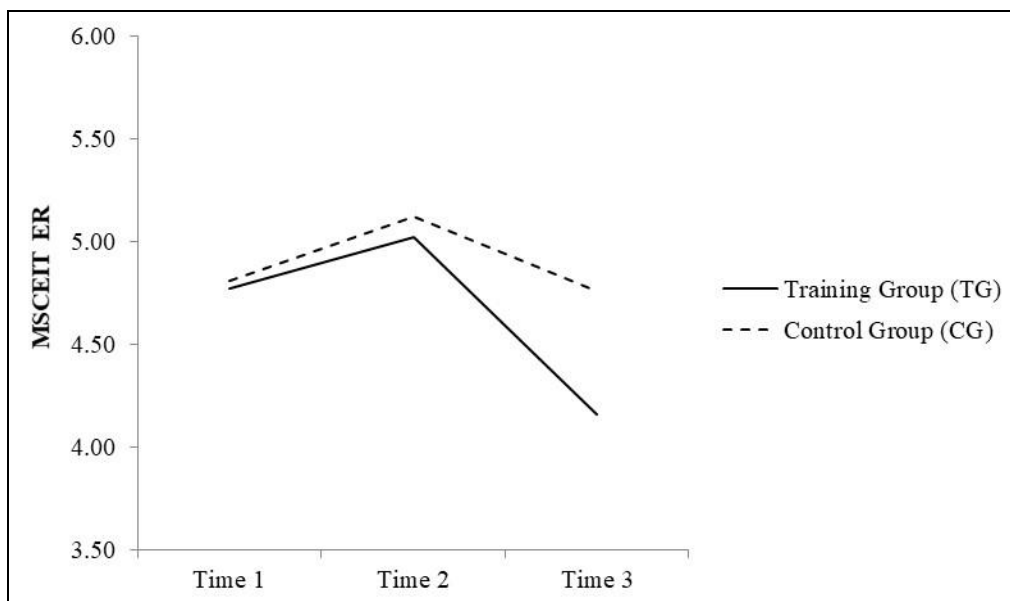
Analyses of the long-term effects yielded a significant Group x Time interaction for the MSCEIT ER,  $F(1, 108) = 3.79, p = .05$ , but not for the MSCEIT EP,  $F(1, 108) = 1.67, p = .20$ . The MSCEIT ER, scores decreased significantly in both groups (Table III), showing an improvement in the ability to regulate emotions in oneself and others in both cases. Indeed, the TG showed larger improvements than the CG (Figure 2). The Group x Time interaction was nonsignificant for MSCEIT EP.

However, significant differences between Times 2 and 3 revealed a decrease in MSCEIT EP—and thus an improvement—in EP ability in the CG. The differences between Times 2 and 3 were not significant in the TG. The result suggests that the improvement of EP from Time 1 to Time 2 remained stable in the TG after 6 weeks (Table III). The development of the two variables (MSCEIT EP and ER) is illustrated in Figures 1 and 2, respectively.



**Figure 1. Effect of WEIT on emotion perception assessed by the MSCEIT across three time points.**

*Note. Due to a reverse score square root transformation of the dependent variable, the interpretation of the figure was reversed such that a decrease reflects an improvement in the ability to perceive emotions in the self and others. The sample size at Time 3 (TG: n = 49, CG: n = 61) differed from the sample sizes at Times 1 and 2 (TG: n = 59, CG: n = 75) for both groups due to unsystematic dropout.*



**Figure 2. Effect of WEIT on emotion regulation assessed by the MSCEIT across three time points.**

*Note. Due to a reverse score square root transformation of the dependent variable, the interpretation of the figure was reversed such that a decrease reflects an improvement in the ability to regulate emotions in the self and others. The sample size at Time 3 (TG: n = 49, CG: n = 61) differed from the sample sizes at Times 1 and 2 (TG: n = 59, CG: n = 75) for both groups due to unsystematic dropout.*



### *Perceived stress*

The analysis of short-term effects found no significant Group x Time interaction on the Irritation scale,  $F(1, 131) = 2.85, p = .09$ . However, although stress levels did not differ from Time 1 to Time 2 in the TG, the CG reported experiencing significantly more stress at Time 2 than at Time 1 (Table II). With regard to long-term effects, there was no significant Group x Time interaction on the Irritation scale,  $F(1, 107) = 0.01, p = .91$ . There were no differences between Times 2 and 3 in either group (Table III).

### **Discussion**

In this study, we aimed to investigate whether WBT improved EP and ER abilities and other EI-related outcomes. We hypothesized that performance-based EI abilities in the TG would increase after WEIT (Hypothesis 1a) and remain stable in the long run (Hypothesis 1b) in comparison with a CG. Furthermore, we tested whether WEIT would result in less perceived stress for the participants (Hypothesis 2a) and whether these improvements would remain stable 6 weeks after WEIT (Hypothesis 2b). Using an experimental research design (i.e., controlled randomization, wait list CG), we showed that WEIT led to short-term changes in the ability to perceive emotions in oneself and others. In comparison with the CG, the ability to perceive emotions increased in the TG only. However, neither the TG nor the CG showed better ER abilities directly after WEIT. Taken together, Hypothesis 1a was only partially supported. With respect to the question of sustainability, we found that short-term effects remained stable in the TG, but the CG participants showed a significant improvement in the ability to perceive emotions between Times 2 and 3. However, results concerning the EP branch have to be treated with caution because the groups did not differ significantly from each other at Time 3. We also found that the ability to regulate emotions in oneself and others increased significantly in both groups, and the TG had larger improvements than the CG. Thus, Hypothesis 1b was also partly supported.

Our finding that the EP of the TG (but not the CG) improved directly after training is in line with previous research that showed the effectiveness of face-to-face EI training (Di Fabio & Kenny, 2011). By contrast, in the current study, we did not find long-term effects in EP in terms of significant group differences between the TG and CG. However, the results showed that improvements in the ability to perceive emotions remained stable in the TG. The finding that the EP abilities of the CG—but not the TG—improved from posttest to follow-up was indeed surprising but may be due to test-retest effects. In general, only a few studies have investigated long-term training effects of EI interventions. Indeed, a recent meta-analysis by Hodzic et al. (2018) showed that studies that examined long-term changes in EI chose an average time interval of approximately 4 months between the posttest and the follow-up test. By contrast, the time interval in the present study was only 6 weeks for practical reasons, but this duration may have been too short to show additional effects on EP. Alternatively, the lack of long-term changes in EP could be due to the training concept. For example, once participants completed their training, they neither had access to the training material nor did they receive a detailed handout after completing WEIT, and this might have reduced transfer effects.

**Table II. Means, Standard Deviations, and Significant Differences between Times 1 and 2 for each Variable and each Group**

Variable	TG (n = 59)						CG (n = 75)					
	Time 1		Time 2				Time 1		Time 2			
	M	SD	M	SD	t	p	M	SD	M	SD	t	p
MSCEIT EP	4.28	1.47	3.90	1.57	1.96	.05	4.46	1.66	4.58	1.79	-0.81	.42
MSCEIT ER	4.77	1.41	5.02	1.49	-1.50	.14	4.81	1.29	5.12	1.48	-1.88	.07
Irritation	1.71	0.33	1.70	0.36	0.27	.79	1.60	0.25	1.66	0.32	-2.18	.03

Note. N = 134. For Irritation, one case was deleted due to missing data at Time 2. Due to a reverse score square root transformation, the interpretation of the variables was reversed.

**Table III. Means, Standard Deviations, and Significant Differences between Times 2 and 3 for each Variable and each Group**

Variable	TG (n = 49)						CG (n = 61)					
	Time 2		Time 3				Time 2		Time 3			
	M	SD	M	SD	t	p	M	SD	M	SD	t	p
MSCEIT EP	3.96	1.67	3.87	1.77	0.56	.58	4.52	1.74	4.18	1.75	2.63	.01
MSCEIT ER	5.03	1.49	4.16	1.56	24	.00	5.16	1.33	4.72	1.34	2.27	.03
Irritation	1.70	0.37	1.75	0.33	-1.28	.21	1.65	0.32	1.69	0.33	-1.37	.18

Note. N = 110. For Irritation, one case was deleted due to missing data at Time 2. Due to a reverse score square root transformation, the interpretation of the variables was reversed.

In contrast to our hypothesis, the ability to regulate emotions in oneself and others did not improve directly after WEIT. This finding does not concur with meta-analysis results on face-to-face training (Schutte et al., 2013). However, participants' ER abilities improved from posttest to follow-up. As ER constitutes the most complex facet of Mayer and Salovey's (1997) model, it is plausible that participants need more time to apply and internalize the skills associated with ER. A recent EI intervention study by Herpertz, Nezlek, and Schütz (2019) underscores the importance of improving basic abilities such as EP in order to improve more complex ER abilities.

In order to test the effectiveness of WEIT, we further investigated which benefits (i.e., less perceived stress) resulted from such an EI intervention. However, we found neither short-term nor long-term training effects for perceived stress. This result is in contrast to studies showing that face-to-face EI training can reduce stress (Kotsou et al., 2011). However, other studies have failed to find such training effects. For example, in a sample of university students, Görgens-Ekermans, Delport, and Du Preez (2015) found that perceived stress did not decrease following an EI intervention. However, the current study showed that participants in the CG experienced more stress at Time 2 than at Time 1, whereas the stress levels of the TG did not increase after they completed WEIT, which corresponds to the expected training effects. Missing effects on perceived stress may also be due to the training framework. In general, WEIT was designed as a relatively short intervention (four hours in total, followed by a four-week online practice period comprising one brief transfer exercise per week). Face-to-face interventions that successfully enhanced EI and EI-related outcomes lasted much longer—at least 15 to 18 hours—and implemented longer breaks between each session to enhance transfer (Kotsou et al., 2011). Another explanation may be that the WBT format might not be suited to improve perceived stress. Even though online stress interventions have been shown to be effective overall (Heber et al., 2017), web-based positive psychological interventions tend to have smaller effects than face-to-face interventions (Koydemir, Sökmez, & Schütz, 2018).

#### *Limitations and Future Research*

First, the sample of the present study consisted of students. Although business students may represent the leaders of tomorrow, the results cannot be transferred directly to managerial staff in a work environment. Thus, future research should replicate the findings in a sample of leaders. Secondly, in terms of the research design, the current study did not make use of an active CG for practical reasons. Future studies should thus include an active CG that completes a separate intervention (e.g., time management training) in order to make sure that the training effects found in this study are specific to the intervention. In addition, in future research, both performance tests and ability-based self-report scales should be used to examine different aspects of EI. Besides, the reliability of the MSCEIT ER subtest was relatively low even if it was comparable to other research (Steinmayr et al., 2011). Thus, using self-report ER scales and performance-based measure with better reliability would be useful. In addition, the time interval between the posttest and follow-up test was only six weeks for practical reasons. A longer interval (e.g., at least 6 months) as well as subsequent measurement points may be helpful for investigating long-term effects.

Third, we decided to enhance EI through WBT and designed a rather brief intervention with a total duration of approximately four hours plus a subsequent online practice period to meet the time constraints associated with holding a leadership position. However, a longer duration may yield stronger results (Hodzic et al., 2018). Thus, it may be reasonable to extend the duration of WEIT and spread it over a longer time period. Finally, WEIT did not provide maximum flexibility. For example, participants were able to work on the modules only on weekdays. In future studies, participants could be given the opportunity to work through the modules on weekends, which may comply with leaders' time constraints and thus reduce dropout. Moreover, future studies could test a blended learning approach (Erpenbeck et al., 2015) to combine the advantages of face-to-face training and WBT.

### *Practical Implications*

EI has been found to be an important personal resource in work settings (Côté, 2014; Schütz & Koydemir, 2018). Leaders in particular benefit from high EI (Rosete & Ciarrochi, 2005). Thus, training leaders—through face-to-face training, WBT, or a combination of the two—appears to be a reasonable and useful approach for organizations. Especially for leaders, the WBT format comes with some crucial advantages such as high flexibility. Indeed, based on the results of the current study, WEIT appears promising but needs further refinement and validation. For example, the study results suggest that the ability to perceive emotions improves rather quickly and that the enhancement of ER ability needs more time. With respect to EI training, this means that training programs should start with EP and then move to modules in improving ER. These modules should be longer and more intensive (see Hodzic et al., 2018).

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### **References**

- Côté, S. (2014). Emotional intelligence in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 459–488. doi:10.1146/annurev-orgpsych-031413-091233
- Côté, S., Lopes, P. N., Salovey, P., & Miners, C. T. (2010). Emotional intelligence and leadership emergence in small groups. *The Leadership Quarterly*, 21(3), 496–508. doi:10.1016/j.leaqua.2010.03.012
- Di Fabio, A., & Kenny, M. E. (2011). Promoting emotional intelligence and career decision making among Italian high school students. *Journal of Career Assessment*, 19(1), 21–34. doi:10.1177/1069072710382530
- Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: Integrating the past with an eye toward the future. *Journal of Management*, 38(6), 1715–1759. doi:10.1177/0149206311415280

- Erpenbeck, J., Sauter, S., & Sauter, W. (2015). *E-Learning und Blended Learning: Selbstgesteuerte Lernprozesse zum Wissensaufbau und zur Qualifizierung [E-learning and blended learning: Self-directed learning processes for knowledge development and qualification]*. Wiesbaden: Springer Fachmedien.
- Farh, C. I. C. C., Seo, M.-G., & Tesluk, P. E. (2012). Emotional intelligence, teamwork effectiveness, and job performance: The moderating role of job context. *Journal of Applied Psychology, 97*(4), 890–900. doi:10.1037/a0027377
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE.
- Görgens-Ekermans, G., Delpont, M., & Du Preez, R. (2015). Developing emotional intelligence as a key psychological resource reservoir for sustained student success. *SA Journal of Industrial Psychology, 41*(1), 1–13. doi:10.4102/sajip.v41i1.1251
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly, 6*(2), 219–247. doi:10.1016/1048-9843(95)90036-5
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271–299. doi:10.1037/1089-2680.2.3.271
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*, 281–291. doi:10.1017.S0048577201393198
- Hambrick, D. C., Finkelstein, S., & Mooney, A. C. (2005). Executive job demands: New insights for explaining strategic decisions and leader behaviors. *Academy of Management Review, 30*(3), 472–491. doi:10.2307/20159139
- Harms, P.D., Credé, M., Tynan, M., Leon, M., & Jeung, W. (2017). Leadership and stress: A meta-analytic review. *The Leadership Quarterly, 28*(1), 178–194. doi:10.1016/j.leaqua.2016.10.006
- Heber, E., Ebert, D. D., Lehr, D., Cuijpers, P., Berking, M., Nobis, S., & Riper, H. (2017). The benefit of web-and computer-based interventions for stress: A systematic review and meta-analysis. *Journal of Medical Internet Research, 19*(2), e32. doi:10.2196/jmir.5774
- Herpertz, S. (2016). *Emotional intelligence at work - A different way of being smart. Why emotional intelligence can matter in personnel selection and how it can be taught* (Doctoral dissertation). Otto-Friedrich-Universität Bamberg, Bamberg, Germany.
- Herpertz, S., & Schütz, A. (2016). “EMO-TRAIN”: Ein Interventionsprogramm zur Förderung von Empathie, Emotionswahrnehmung und -regulation [“EMO-TRAIN”: An intervention program for the development of empathy, emotion perception, and regulation]. In M. Roth, V. Schönfeld, & T. Altmann (Eds.), *Trainings- und Interventionsprogramme zur Förderung von Empathie* (pp. 141–155). Berlin, Heidelberg: Springer.

- Herpertz, S., Nezlek, J. B., & Schütz, A. (2019). *Training ability emotional intelligence: Does training in basic emotional abilities help people to improve higher emotional abilities?* Manuscript in preparation.
- Herpertz, S., Schütz, A., & Nezlek, J. (2016). Enhancing emotion perception, a fundamental component of emotional intelligence: Using multiple-group SEM to evaluate a training program. *Personality and Individual Differences, 95*, 11–19. doi:10.1016/j.paid.2016.02.015
- Hodzic, S., Scharfen, J., Ripoll, P., Holling, H., & Zenasni, F. (2018). How efficient are emotional intelligence trainings: A meta-analysis. *Emotion Review, 10*(2), 138–148. doi:10.1177/1754073917708613
- Humphrey, R. H., Ashforth, B. E., & Diefendorff, J. M. (2015). The bright side of emotional labor. *Journal of Organizational Behavior, 36*(6), 749–769. doi:10.1002/job.2019
- Joseph, D. L., & Newman, D. A. (2010). Emotional intelligence: An integrative meta-analysis and cascading model. *Journal of Applied Psychology, 95*(1), 54–78. doi:10.1037/a0017286
- Jung, Y.-H., Ha, T. M., Oh, C. Y., Lee, U. I. S., Jang, J. H., Kim, J., Park, J.-O., & Kang, D.-H. (2016). The effects of an online mind-body training program on stress, coping strategies, emotional intelligence, resilience and psychological state. *PLOS ONE, 11*(8), e0159841. doi:10.1371/journal.pone.0159841
- Kimiloglu, H., Ozturan, M., & Kutlu, B. (2017). Perceptions about and attitude toward the usage of e-learning in corporate training. *Computers in Human Behavior, 72*, 339–349. doi:10.1016/j.chb.2017.02.062
- Köppe, C., Kammerhoff, J., & Schütz, A. (2018). Leader-follower crossover: exhaustion predicts somatic complaints via StaffCare behavior. *Journal of Managerial Psychology, 33*(3), 297–310. doi:10.1108/JMP-10-2017-0367
- Kotsou, I., Nelis, D., Grégoire, J., & Mikolajczak, M. (2011). Emotional plasticity: Conditions and effects of improving emotional competence in adulthood. *Journal of Applied Psychology, 96*(4), 827–839. doi:10.1037/a0023047
- Koydemir, S., Sökmez, A. B., & Schütz, A. (2018). *A meta-analysis of the effectiveness of randomized and controlled positive psychological interventions on subjective and psychological wellbeing.* Manuscript in preparation.
- Lopes, P. N., Brackett, M. A., Nezlek, J. B., Schütz, A., Sellin, I., & Salovey, P. (2004). Emotional intelligence and social interaction. *Personality and social psychology bulletin, 30*(8), 1018–1034. doi:10.1177/0146167204264762
- Lopes, P. N., Nezlek, J. B., Extremera, N., Hertel, J., Fernández-Berrocal, P., Schütz, A., & Salovey, P. (2011). Emotion regulation and the quality of social interaction: Does the ability to evaluate emotional situations and identify effective responses matter? *Journal of Personality, 79*(2), 429–467. doi:10.1111/j.1467-6494.2010.00689.x

- Martins, A., Ramalho, N., & Morin, E. (2010). A comprehensive meta-analysis of the relationship between emotional intelligence and health. *Personality and Individual Differences, 49*(6), 554–564. doi:10.1016/j.paid.2010.05.029
- Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3–31). New York, NY: Basic Books.
- MMB-Institut für Medien- und Kompetenzforschung (n.d.) (2019, March 7). Anteil der Befragten, die der Nutzung der folgenden Anwendungen als Lernformen in Unternehmen in den kommenden drei Jahren eine zentrale Bedeutung beimisst, in der DACH-Region im Jahr 2017/18. In *Statista - Das Statistik-Portal*. Retrieved from <https://de.statista.com/statistik/daten/studie/203748/umfrage/bedeutung-von-e-learning-anwendungen-in-unternehmen/>
- Mohr, G., & Rigotti, T. (2014). Irritation (Gereiztheit). *Zusammenstellung sozialwissenschaftlicher Items und Skalen*. doi:10.6102/zis30
- Mohr, G., Rigotti, T., & Müller, A. (2005). Irritation - ein Instrument zur Erfassung psychischer Beanspruchung im Arbeitskontext. Skalen- und Itemparameter aus 15 Studien [Irritation - An instrument assessing mental strain in working contexts. Scale and item parameters in 15 studies]. *Zeitschrift für Arbeits- und Organisationspsychologie A&O, 49*(1), 44–48. doi:10.1026/0932-4089.49.1.44
- Newman, D. A., Joseph, D. L., & MacCann, C. (2010). Emotional intelligence and job performance: The importance of emotion regulation and emotional labor context. *Industrial and Organizational Psychology, 3*(2), 159–164. doi:10.1111/j.1754-9434.2010.01218.x
- Nizielski, S., Hallum, S., Schütz, A., & Lopes, P. N. (2013). A note on emotion appraisal and burnout: The mediating role of antecedent-focused coping strategies. *Journal of Occupational Health Psychology, 18*(3), 363–369. doi:10.1037/a0033043
- O'Boyle, E. H., Humphrey, R. H., Pollack, J. M., Hawver, T. H., & Story, P. A. (2011). The relation between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior, 32*(5), 788–818. doi:10.1002/job.714
- Ouweneel, E., Le Blanc, P. M., & Schaufeli, W. B. (2013). Do-it-yourself: An online positive psychology intervention to promote positive emotions, self-efficacy, and engagement at work. *Career Development International, 18*(2), 173–195. doi:10.1108/CDI-10-2012-0102
- Rosenberg, M. B. (2010). *Gewaltfreie Kommunikation: Eine Sprache des Lebens [Non-violent communication: A language of life]*. Paderborn: Junfermann.
- Rosete, D., & Ciarrochi, J. (2005). Emotional intelligence and its relationship to workplace performance outcomes of leadership effectiveness. *Leadership & Organization Development Journal, 26*(5), 388–399. doi:10.1108/01437730510607871

- Rubin, R. S., Munz, D. C., & Bommer, W. H. (2005). Leading from within: The effects of emotion recognition and personality on transformational leadership behaviour. *The Academy of Management Journal*, 48(5), 845–858. doi:10.5465/AMJ.2005.18803926
- Salovey, P., & Mayer, J. D. (1990). Emotional Intelligence. *Imagination, Cognition and Personality*, 9(3), 185–211. doi:10.2190/DUGG-P24E-52WK-6CDG
- Sánchez-Álvarez, N., Extremera, N., & Fernández-Berrocal, P. (2016). The relation between emotional intelligence and subjective well-being: A meta-analytic investigation. *The Journal of Positive Psychology*, 11(3), 276–285. doi:10.1080/17439760.2015.1058968
- Schutte, N. S., Malouff, J. M., & Thorsteinsson, E. B. (2013). Increasing emotional intelligence through training: Current status and future directions. *International Journal of Emotional Education*, 5(1), 56–72.
- Schütz, A., & Koydemir, S. (2018). Emotional intelligence: What it is, how it can be measured and increased and whether it makes us successful and happy. In T. Todd Shackelford & V. Zeigler-Hill (Eds.), *The SAGE Handbook of Personality and Individual Differences* (pp. 397–423). Thousand Oaks, CA: Sage.
- Skakon, J., Nielsen, K., Borg, V., & Guzman, J. (2010). Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research. *Work & Stress*, 24(2), 107–139. doi:10.1080/02678373.2010.495262
- Slaski, M., & Cartwright, S. (2003). Emotional intelligence training and its implications for stress, health and performance. *Stress and Health*, 19(4), 233–239. doi:10.1002/smi.979
- Spijkerman, M. P. J., Pots, W. T. M., & Bohlmeijer, E. T. (2016). Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials. *Clinical Psychology Review*, 45, 102–114. doi:10.1016/j.cpr.2016.03.009
- Steinmayr, R., Schütz, A., Hertel, J., & Schröder-Abé, M. (2011). *Mayer-Salovey-Caruso Test zur Emotionalen Intelligenz (MSCEIT™). Deutschsprachige Adaptation des Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT™) von John D. Mayer, Peter Salovey und David R. Caruso.* Bern, Switzerland: Verlag Hans Huber.
- Wang, G., Oh, I. S., Courtright, S. H., & Colbert, A. E. (2011). Transformational leadership and performance across criteria and levels: A meta-analytic review of 25 years of research. *Group & Organization Management*, 36(2), 223–270. doi:10.1177/1059601111401017