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

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Abstract

We evaluated a Web-Based Emotional Intelligence Training (WEIT) program that was based on the four-branch model of emotional intelligence (EI; Mayer & Salovey, 1997) and which aimed at improving emotion perception (EP) and emotion regulation (ER) abilities in future leaders. Using a controlled experimental design, we evaluated 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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1 Introduction

EI has attracted considerable attention in recent years (for a review, see Côté, 2014). For example, studies have shown that EI is related to important work outcomes such as job performance (e.g., O'Boyle, Humphrey, Pollack, Hawver, & Story, 2011). Moreover, EI is particularly helpful in leadership. That is, EI has been found to be associated with leadership emergence (Côté, Lopes, Salovey, & Miners, 2010) and leadership effectiveness (Rosete & Ciarrochi, 2005). Studies have shown that people high in EI have better subjective well-being (Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2016) and health (Martins, Ramalho, & Morin, 2010). The 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 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 next years (Institut für Medien- und Kompetenzforschung, 2018). However, whereas studies have already shown that EI can be enhanced through face-to-face training (for a review, see, 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: Training programs have often been missing a clear theoretical basis, have 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 (e.g., Schutte, Malouff, & Thorsteinsson, 2013). We aimed to overcome the shortcomings of previous research: First, WEIT was based on a clear theoretical background and methods that have been shown to foster a

sustainable impact. Second, we used an experimental design in which participants were randomly assigned to either a TG or a wait list CG. Third, we tested for sustainability by administering a follow-up test 6 weeks after WEIT. Fourth, instead of relying on self-reported EI measures, we administered a performance-based test to measure EI.

1.1 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 trained. 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: (1) perceiving emotions, (2) using emotions, (3) understanding emotions, and (4) regulating emotions. Later 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 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 the branches of perceiving and regulating emotions that are 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 work demands. In addition, a study by Nizielski, Hallum, Schütz, and Lopes (2013) showed 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 (e.g., health-promoting leadership; Köppe, Kammerhoff, & Schütz, 2018) but more negative leadership behavior (e.g., 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, e.g. communicating a vision or setting ambitious work goals. In turn, transformational leadership is associated with various positive outcomes such as employee performance (e.g., Wang, Oh, Courtright, & Colbert, 2011) and well-being (e.g., 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 (e.g., employees, customers). In this vein, 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). Besides, studies have shown that people who are good at managing emotions have fewer conflicts (Lopes, Nezlek, Extremera, Hertel, Fernández-Berrocal, Schütz, & Salovey, 2011) and better relationships (e.g., Lopes, Brackett, Nezlek, Schütz, Sellin, & Salovey, 2004). Thus, the ability to regulate emotions seems to be an important asset in the context of leadership. In this vein, positive leader-employee relationships (leader-member exchange theory; Graen & Uhl-Bien, 1995) are associated with various positive work-related outcomes (e.g., 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 cultivate. Consequently, we designed a training program that was aimed at enhancing the "core" aspects of EI (i.e., EP and ER) in future leaders.

1.2 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 (cf. 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 best suited them. In addition, the web-based format allows organizations to save significant amounts of money by cutting costs for travel, accommodation, and trainers 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, Ebert, Lehr, Cuijpers, Berking, Nobis, & Riper, 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 the following:

Hypothesis 1a: WEIT will lead to an increase in participants' EP and ER abilities as measured directly after the intervention (short-term effects).

Hypothesis 1b: The improvement through WEIT will remain stable over time (6 weeks after the end of the intervention), reflecting long-term effects.

1.3 Positive Effects of WEIT on Perceived Stress

In this study, we 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. For example, a recent study by Köppe et al. (2018) showed that exhausted leaders attended less to the health of their employees, who in turn had more somatic complaints.

Empirical evidence has shown that 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. In considering these results together, we proposed the following:

Hypothesis 2a: WEIT will reduce stress measured directly after the intervention (short-term effects).

Hypothesis 2b: The improvement in stress will remain stable over time (6 weeks after the end of the intervention), reflecting long-term effects.

2 Material and methods

2.1 Procedure

Students from business administration and management or business-related studies from different German universities were recruited in various ways (e.g., flyers, mailing lists).

Participants registered for the training program via e-mail and were randomly assigned to the TG or wait list CG. Participants completed an online battery before the intervention (Time 1, pretest), directly after the intervention (Time 2, posttest), and 6 weeks later (Time 3, follow-up test). The wait list CG 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 that were spread over 4 working days, starting on a Monday. Once a participant had completed all four modules, a 4-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.

2.2 Participants

Participants were 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. Thus, 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. 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 (MSCEIT EP, $t(29) = -1.05$, $p = .30$; MSCEIT ER, $t(132) = -0.78$, $p = .44$; Irritation, $t(132) = 0.35$, $p = .73$). However, there were significant differences between the two groups in gender, $\chi^2 = 7.41$, $p = .01$; more women than men 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 women and 51 men 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 regarding 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, $\chi^2 = 0.62$, $p = .43$.

2.3 The WEIT program

WEIT builds on the empirically validated 1-day face-to-face training program EMO-TRAIN (Herpertz & Schütz, 2016; Herpertz, Schütz, & Nezlek, 2016). WEIT consisted of a pre-assignment task, the actual WEIT, which comprised four 1-hr modules, and a 4-week online practice period and included the four consecutive modules: (a) EP in others, (b) EP in the self, (c) ER in the self, and (d) 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 (see Erpenbeck et al., 2015). Each module concluded with a multiple-choice quiz and a homework assignment.

In the first module (i.e., EP in others), 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 (i.e., EP in oneself), participants viewed brief scenarios that demonstrated the links between specific situations, cognitive evaluations of the situation, and the development of emotions. They were thus introduced to a better understanding of their own emotions.

The main focus of the third module (i.e., ER in oneself) 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 (e.g., listening to guided imagery).

In the fourth module (i.e., ER in others), participants were familiarized with, for example, the concept of nonviolent communication by Rosenberg (2010). Video clips were 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, reality-based exercises were included 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 4-week online practice period was designed to consolidate key aspects of every module through a condensed assignment for each week.

2.4 Measures

All measures mentioned here were assessed three times: prior to the intervention (Time 1), directly after the intervention (Time 2), and 6 weeks later (Time 3).

2.4.1 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 capture 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 with 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).

2.4.2 Irritation

The Irritation scale by Mohr and Rigotti (2014) was used to measure perceived stress. 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 (e.g., Mohr, Rigotti, & Müller, 2005). The internal consistencies in the present study were α = .78 (Time 1), α = .83 (Time 2), and α = .82 (Time 3).

3 Results

3.1 Preliminary Analyses

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).

Insert Table I here

3.2 Tests of Hypotheses

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) of training. 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.

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.

3.2.1 EI changes

Concerning short-term effects of WEIT, 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 (see 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 for the ER branch of the MSCEIT (see Table II again).

Analyses regarding 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, $F(1, 108) = 1.67$, $p = .20$, which partially supported Hypothesis 2a. For the MSCEIT ER, scores decreased significantly in both groups (see Table III), showing an improvement of the ability to regulate emotions in oneself and

others in both cases. Indeed, the TG showed larger improvements than the CG (see Figure 2). The Group x Time interaction was nonsignificant for the MSCEIT EP.

However, significant differences between Times 2 and 3 revealed a decrease for the 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 (see Table III). The development of the two variables (MSCEIT EP and ER) is illustrated in Figures 1 and 2, respectively.

Insert Figures 1 and 2 here

3.2.2 Perceived stress

With regard to the analyses of short-term effects, no significant Group x Time interaction was found for 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 (see Table II).

With regard to long-term effects, there was no significant Group x Time interaction for the Irritation scale, $F(1, 107) = 0.01$, $p = .91$. There were no differences between Times 2 and 3 in either group (see Table III).

Insert Tables II and III here

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4 Discussion

In this study, we aimed to investigate whether WBT was able to improve 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. Concerning ER, we 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 abilities 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 (e.g., Di Fabio & Kenny, 2011). By contrast, in the current study, we did not find long-term effects for the EP branch in terms of significant group differences between the TG and CG. However, 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 were aimed at examining long-term changes in EI chose an average time interval of approximately 4 months between the posttest (directly after training) and the follow-up test. By contrast, the time interval in this 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 in this study 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.

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-analytic results on face-to-face training (e.g., 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. In this vein, 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, with regard to Hypotheses 2a and 2b, 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 (e.g., 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 concept. In general, WEIT was designed as a relatively short intervention (4 hr in total, followed by a 4-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 hr—and implemented longer breaks between each session to enhance transfer (e.g., Kotsou et al., 2011).Another explanation may be that the WBT format might not be suited for improving perceived stress. Even though online stress interventions have been shown to be effective overall (see also Heber et al., 2017), web-based positive psychological interventions tend to have smaller effects than face-to-face interventions (Koydemir, Sökmez, & Schütz, 2018).

4.1 Limitations and Future Research

First, the sample 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.

Second, 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 treatment. In addition, in future research, both performance tests and ability-based self-report scales should be used to capture different aspects of EI. Besides, the reliability of the MSCEIT ER subtask was relatively low even if it was comparable to other research (see, e.g., Steinmayr et al., 2011). Thus, additionally 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 6 weeks for practical reasons. A longer interval (e.g., at least 6 months) as well as subsequent measurement points may be helpful for finding long-term effects.

Third, we decided to enhance EI through WBT and designed a rather brief intervention with a total duration of approximately 4 hr 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 (see Hodzic et al., 2018). Thus, it may be reasonable to extend the duration of WEIT and spread it over a longer time period in order to foster training effects. 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 format (Erpenbeck et al., 2015) to combine the advantages of face-to-face training and WBT.

4.2 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 (e.g., 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—as a web-based alternative for improving the EP and ER abilities of future leaders—seems possible 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. For EI training, this means that training programs should start with EP and then move to modules for improving ER. These modules should be longer and more intensive (see Hodzic et al., 2018) to be able to achieve short-term improvements.

4.3 Conclusion

The present study evaluated a WBT program that was aimed at improving participants' abilities to perceive and regulate emotions in themselves and others in a sample of future leaders. Our results showed that whereas EP increased directly after WEIT and remained stable 6 weeks later, ER improved only in the long run. The results call for refinement and validation of WEIT.

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Table I

Means, Standard Deviations, and Significant Differences between the TG and CG prior to the Intervention

	TG (n = 59)		CG (n = 75)			
	M	*SD*	*M*	*SD*	*t*	*p*
MSCEIT EP	4.28	1.47	4.46	1.66	−0.65	.51
MSCEIT ER	4.77	1.41	4.81	1.29	−0.14	.89
Irritation	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. TG = training group; CG = control group; MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test; MSCEIT EP = MSCEIT emotion perception branch; MSCEIT ER = MSCEIT emotion regulation branch.

Table II

Means, Standard Deviations, and Significant Differences between Times 1 and 2 for each Variable and each Group

	TG (n = 59)						CG (n = 75)					
	Time 1		Time 2				Time 1		Time 2			
Variable	*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. TG = training group; CG = control group; MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test; MSCEIT EP = MSCEIT emotion perception branch; MSCEIT ER = MSCEIT emotion regulation branch; Time 1 = before the intervention; Time 2 = directly after the intervention (after the 4-week online practice period).

Table III

Means, Standard Deviations, and Significant Differences between Times 2 and 3 for each Variable and each Group

	TG (n = 49)						CG (n = 61)					
	Time 2		Time 3				Time 2		Time 3			
Variable	*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	5.24	.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. TG = training group; CG = control group; MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test; MSCEIT EP = MSCEIT emotion perception branch; MSCEIT ER = MSCEIT emotion regulation branch; Time 2 = directly after the intervention (after the 4-week online practice period); Time 3 = 6 weeks after the intervention.

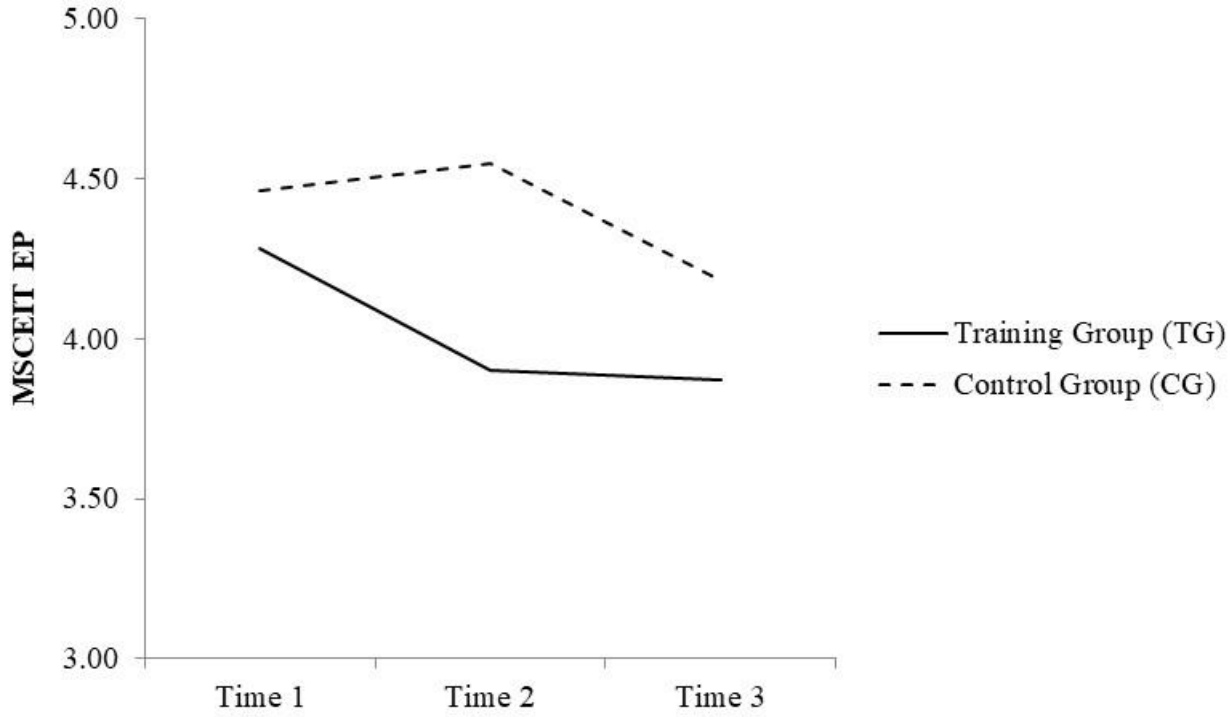

Figure 1. Effect of WEIT on emotion perception assessed by the MSCEIT across three time points. Due to a reverse score square root transformation of the dependent variable, the interpretation of the figure was reversed such that a decrease reflects an improvement in the ability to perceive emotions in 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. Time 1 = before the intervention; Time 2 = directly after the intervention (after the 4-week online practice period); Time 3 = 6 weeks after the intervention.

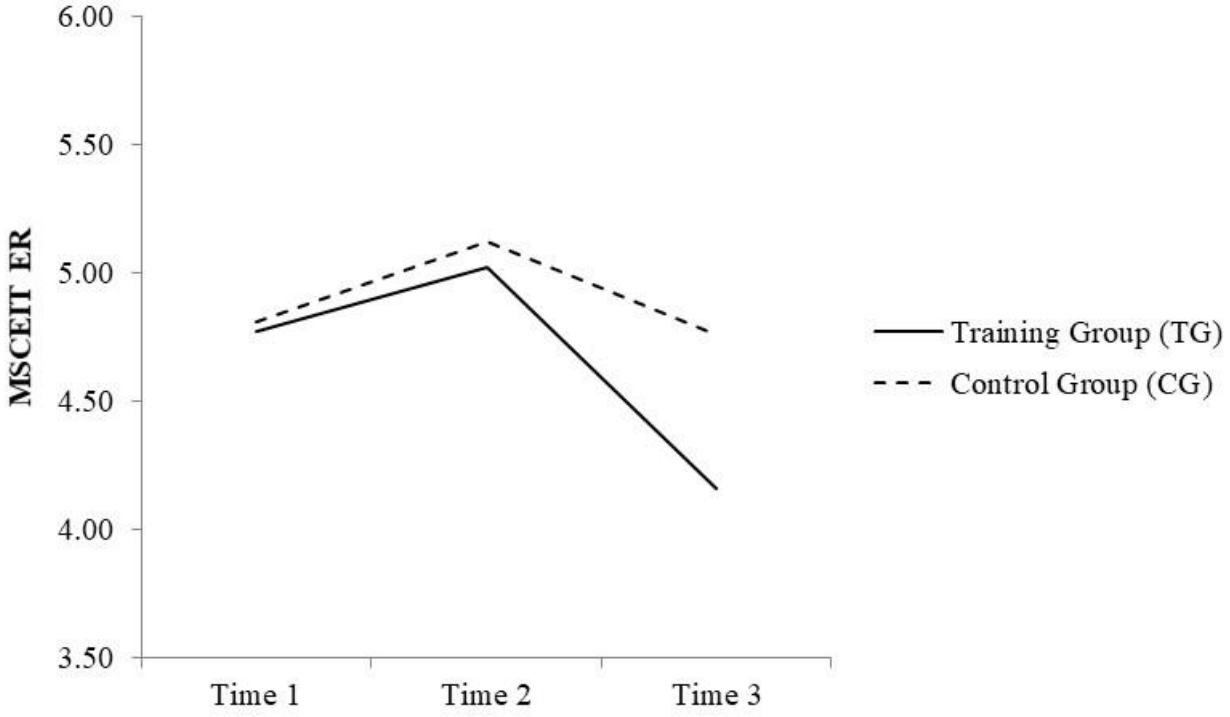

Figure 2. Effect of WEIT on emotion regulation assessed by the MSCEIT across three time points. Due to a reverse score square root transformation of the dependent variable, the interpretation of the figure was reversed such that a decrease reflects an improvement in the ability to regulate emotions in 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. Time 1 = before the intervention; Time 2 = directly after the intervention (after the 4-week online practice period); Time 3 = 6 weeks after the intervention.

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