The effects of emotion recognition training on interpersonal effectiveness

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Abstract

Being accurate in recognizing others' emotions from nonverbal cues has been shown to correlate with a variety of positive social outcomes. Several training programs to enhance emotion recognition ability have been developed; however, no study to date has examined whether such programs affect behaviors and outcomes in face-to-face social interactions. In the present study, dyads of same-gender students were randomly assigned to complete either a self-administered brief emotion recognition training or a control training about cloud types. All dyads then engaged in an employee-recruiter negotiation. Results showed that dyads trained in emotion recognition reached more egalitarian economic outcomes, rated themselves and their partners as less competitive after the negotiation, and received higher ratings of positive affect from independent observers. These findings open up the potential for various applications in the context of work, education, and close relationships.

Keywords: Emotion recognition, training, negotiation, interpersonal accuracy

The effects of emotion recognition training on interpersonal effectiveness

Emotion recognition ability (ERA)—defined as accuracy in interpreting others' nonverbal emotion expressions—has been shown to correlate with an array of positive and adaptive personality traits, better psychological functioning, and positive workplace outcomes (see, for example, meta-analyses by Dalili, Penton-Voak, Harmer, & Munafò, 2015; Elfenbein, Foo, White, Tan, & Aik, 2007; Hall, Andrzejewski, & Yopchick, 2009; and Marsh & Blair, 2008). These results are in line with the theoretical conceptualization of ERA as a fundamental component of the adaptive constructs of emotional intelligence (e.g., Mayer, Salovey, & Caruso, 2016) and interpersonal accuracy (Hall, Schmid Mast, & West, 2016).

It is generally believed that this skill is manifest in interpersonal interactions and that high-ERA people can translate their understanding of the other person's preferences and intentions into effective other-directed behavior (Schmid Mast & Hall, 2018). For example, medical students with high ERA were perceived as being more interpersonally perceptive by standardized patients (Hall et al., 2015) and, in a different sample, by independent coders as creating rapport and compassion in their patient interactions (Hall, Blanch, Roter, & Frankel, 2009). Funder and Harris (1986) found that students with high ERA were rated by their peers as being turned to for advice and reassurance and as being warm and compassionate.

Due to the multitude of positive outcomes of ERA, several training programs to improve this skill in healthy adults have been developed (for an overview, see Blanch-Hartigan, Andrzejewski, & Hill, 2016). These programs range in duration from one session (e.g., Schlegel, Vicaria, Isaacowitz, & Hall, 2017b; Matsumoto & Hwang, 2011) to repeated sessions over several weeks (e.g., Herpertz, Schütz, & Nezlek, 2016; Hurley, 2012), and are either self-administered (e.g., Schlegel et al., 2017b) or involve an instructor (e.g., Hurley, 2012; Herpertz et al., 2016). Most trainings use a combination of practice and feedback; that is, participants are presented with emotional expressions, guess which emotion was being

shown in each, and are informed about the correctness of their guesses. Some trainings additionally involve discussions between participants (e.g., Ruben, Hall, Curtin, Blanch-Hartigan, & Ship, 2015) or instructions raising their awareness of the importance of ERA (Blanch-Hartigan, 2012).

Although these trainings typically lead to an increased performance in standard ERA tests, very little is known about whether this improvement translates into higher effectiveness in real-life social interactions. The study by Matsumoto and Hwang (2011) found that department store employees received higher ratings of social and communicative skills on the job after completing a micro-expression recognition training, but to our knowledge no study has examined the effects of ERA training in a face-to-face interaction. The present study aims to close this gap in order to first, gain a better understanding of the utility of ERA trainings, and second, to investigate the assumed causal relationship between ERA and interpersonal outcomes. This latter goal is crucial, as nearly the entire literature on interpersonal accuracy is based on correlational studies that do not have the capacity to demonstrate a causal impact of better accuracy.

In the present study, we randomly assigned dyads of unacquainted participants to complete either a brief validated audio-visual ERA training (the Training of Emotion Recognition Ability or TERA; Schlegel et al., 2017b) or an identically structured control training about cloud types (e.g., cumulus, cirrus, etc.), and asked them afterwards to engage in a widely used negotiation task about a fictitious work contract (Pinkley, Neale, & Bennett, 1994).

Negotiations represent an interesting setting for studying emotional skills for several reasons. First, they encompass both competitive and cooperative elements in that the negotiators try to achieve their individual goals but ultimately still need to reach a mutual agreement, creating the potential for a variety of positive and negative emotions that can be

felt and/or expressed. Second, in standard negotiation tasks the topics, options, and economic gains (points) are predefined which makes the interactions relatively structured and comparable between dyads. Third, such tasks allow studying a variety of outcomes that we examined in the present study: *Economic outcomes* include joint gains reflecting how well the dyad members succeeded in arriving at a mutually beneficial deal, as well as individual gains reflecting the share of the pie one negotiator obtained for him- or herself (e.g., Pinkley et al., 1994). *Relational outcomes* include ratings of trust, rapport, cooperation etc. made by the negotiators (e.g., Curhan, Neale, Ross, & Rosencranz-Engelmann, 2008). Finally, the *negotiation process* can be rated by external observers, for instance with regard to the use of negotiation styles such as forcing or problem solving (De Dreu, Evers, Beersma, Kluwer, & Nauta, 2001) or the general affective tone.

How do we expect ERA training to affect these outcomes? According to Fulmer and Barry (2004), higher ERA should facilitate acquiring information about the counterpart's intentions and preferences, thus allowing the negotiator to identify and propose deals that integrate both parties' goals and result in the creation of more value (i.e., higher joint gains). This assumption was supported by two studies (Elfenbein et al., 2007; Schlegel, Mehu, van Peer, & Scherer, 2018). We therefore hypothesized that dyads that received ERA training would reach higher joint gains than dyads in the control (cloud training) condition (Hypothesis 1). Previous research also found that high ERA negotiators evaluate themselves and are evaluated by their counterparts as more cooperative, and that they are trusted more (Schlegel et al., 2018; Park, Ferrero, Colvin, & Carney, 2013), which is consistent with theoretical assumptions and empirical findings regarding the broader construct of emotional intelligence (e.g., Katz & Sosa, 2015; Kong, Bottom, & Konczak, 2011; Mueller & Curhan, 2006). This is also in line with studies outside of negotiations suggesting that high ERA individuals are more prosocial and kinder (e.g., Funder & Harris, 1986; Kaltwasser,

Hildebrandt, Wilhelm, & Sommer, 2017). We therefore hypothesized that ERA trained dyads would rate themselves and their partners as more cooperative and less competitive than control dyads (Hypothesis 2). In addition, because we thought ERA trained dyads would want to maintain a positive relationship, we expected them to distribute the pie of gains more equally, and therefore to have a lower difference in points between negotiators (Hypothesis 3). Because we believed that negotiators with high ERA would be more likely to value and maintain a positive relationship with their counterpart, and because they may be better at identifying mutually beneficial package deals, we predicted that dyads trained in ERA would use less forcing and more problem solving (Hypothesis 4). Finally, we hypothesized that the affective tone of the dyads trained in ERA would be more positive and less negative (Hypothesis 5).

The current study also aims to replicate previous findings about the role of individual differences in ERA in predicting negotiation outcomes (irrespective of training). To date, only two negotiation studies using standard ERA tests (Elfenbein et al., 2007; Schlegel et al., 2018) and one study using an in-vivo assessment of affect recognition accuracy (Park et al., 2013) have been published. In line with these studies, we expected that, after controlling for the effects of training, higher ERA (especially in the recruiter role) would predict higher dyadic gains (Hypothesis 6). On an individual level (i.e., comparing the relative outcomes of the two negotiators within a dyad), we expected that a negotiator's ERA would positively predict their counterpart's share of the joint pie (Hypothesis 7), because high ERA individuals seem to place more importance on a positive relationship and hence may be more inclined to accommodate their partner (Schlegel et al., 2018; Park et al., 2013). Further, we expected high ERA negotiators to give higher self-ratings and obtain higher partner-ratings of cooperativeness (Hypothesis 8; Schlegel et al., 2018). With respect to observer ratings, we hypothesized that high ERA negotiators would engage in relatively more problem solving

and less forcing (Hypothesis 9). Finally, we expected that high ERA individuals as well as their counterparts would show more positive and less negative affect (Hypothesis 10). The latter two assumptions have not been tested in any previous study.

Method

Participants

Participants were 83 same-gender dyads (42 female-female, 41 male-male) of undergraduate university students who participated in the study for partial course credit in an introductory psychology course. Mean age was 18.65 ($SD = 1.11$) and ethnic composition was 43% White, 27% Asian, seven percent Black, four percent Hispanic, and 18 % reported a mixed or other ethnicity or chose not to report it. Participants in each dyad were unacquainted with each other. Thirteen participants (7%) reported having some experience with negotiation from their college classes or from high school.

Negotiation task

Participants completed the “New Recruit” exercise (Pinkley et al., 1994) in which dyad members are randomly assigned either the role of a “recruiter” or an “employee” and are asked to discuss the terms of an employment contract on eight topics such as salary, vacation days, and starting date of the contract. For each topic, there were five predefined options for agreement. Each participant received a payoff schedule indicating the number of points he or she would win for each option (see Supplementary Table S1). Two of the topics were distributive, meaning that the potential gains of the two parties were diametrically opposed. Two topics were compatible, meaning that participants earned the same amount of points for each possible option. The remaining topics had different values for the participants, allowing them to reach integrative agreements by trading off more and less important issues in order to maximize the gains for both negotiators. In this task, the total points of the dyad reflect to what extent a dyad has succeeded in integrating both parties’ interests. Individual

points reflect which share of the dyad's total pie a negotiator claimed for him- or herself. In addition, the absolute difference between both participants' points was calculated to assess how egalitarian the negotiation was overall.

Emotion recognition training and control ("cloud") training

The Training for Emotion Recognition Ability (TERA; Schlegel et al., 2017b) is a validated 40-min computerized and self-administered training consisting of an instruction part and a practice-with-feedback part. It uses short video clips with sound (duration 1-3 s) from the Geneva Multimodal Emotion Portrayals (GEMEP) database (Bänziger, Mortillaro, & Scherer, 2012) in which 10 actors express different emotions while saying a sentence in a pseudo-language. Each clip shows the actor's upper body and head, and thus conveys facial, postural, gestural, and vocal information. For the training, 14 emotions from the GEMEP were used (6 positive: pride, amusement, joy, pleasure, relief, interest; 7 negative: anger, irritation, fear, anxiety, disgust, despair, sadness; and surprise as an emotion of neutral valence).

In the instruction part, participants read a description of the meaning of each of the 14 emotion words and of the nonverbal cues that can signal each emotion (e.g., for sadness "Slow and low voice, lip corners pulled down, inner eyebrows lifted, frowning, slouched posture, arms hanging, little body movement"). They also watch two example videos for each emotion which they can replay three times. While watching, participants are able to reread the description of the nonverbal cues. Participants then complete the practice-with-feedback part in which they watch 42 new clips and are asked, after each clip, to guess which of the 14 emotions had been expressed. After each choice, participants receive feedback about whether their choice was correct or not. If their response is correct, they continue with the next clip; if their response is incorrect, they watch the same clip again and make a new choice. If their response is still incorrect, participants see the correct emotion word on the screen and

proceed to the next clip. Participants in the control (“cloud”) condition experienced an identically formatted training that was on 14 different kinds of clouds (see Schlegel et al., 2017b, for details).

Geneva Emotion Recognition Test short form (GERT-S; Schlegel & Scherer, 2016)

The GERT-S consists of 42 short video clips with sound in which 10 actors express 14 different emotions (the same emotions as in the TERA, but the clips are different). After each clip, participants are asked to choose which emotion was being expressed. The correct answer is the emotion the actor had been instructed to express. The percentage of correct responses is used as a measure of ERA. The test shows good internal consistency and construct validity (Schlegel, Fontaine, & Scherer, 2017a). In the present study, Cronbach’s alpha was .72.

Post-negotiation questionnaire (relational outcomes)

There were four relational scales (see Supplementary Material for all items; items were rated on a five-point scale from “strongly disagree” to “strongly agree”).

Cooperativeness – self (9 items; Cronbach’s alpha = .82; e.g., “During the exercise, I tried to be cooperative”) and *cooperativeness/ likeability – other* (7 items; alpha = .86; e.g., “He/she created a positive relationship with me”) were taken from Schlegel et al. (2018).

Competitiveness – self (4 items; alpha = .82; e.g., “During the exercise, I tried to be competitive”) and *competitiveness – other* (3 items; alpha = .72; “He/ she acted competitively”) were added because the cooperativeness scales had very high mean levels in Schlegel et al. (2018), potentially leading to a ceiling effect.

Procedure

Upon arrival in the laboratory, participants were seated in different rooms and both completed either the TERA or the cloud training, followed by three standard ERA tests (GERT-S; DANVA-Voice, Nowicki & Duke, 1994; and ERI-Face, Scherer & Scherer, 2011)

in order to assess the effectiveness of the TERA on emotion recognition. As reported in Schlegel et al. (2017b, Study 3), GERT-S and ERI scores were significantly larger in the TERA group than the cloud training group, speaking to the effectiveness of the training. The groups did not differ in self-reported positive or negative affect after their respective training (Schlegel et al., 2017b, Study 3). Here, only the GERT-S is analyzed as a predictor of negotiation outcomes, as it is the most comprehensive ERA measure (containing dynamic multimodal stimuli) and has been previously used in negotiation research (Schlegel et al., 2018).

Participants then received the negotiation instructions for their randomly assigned role and were given about 10 minutes to prepare. Participants were instructed to earn as many points as possible as their gains were going to be converted into money if they reached an agreement within 30 minutes. They were able to use their payoff schedule during the negotiation but were not allowed to show it to their counterpart. The interaction was audio- and video-recorded, with the negotiators facing each other and without the experimenter being present in the room. Upon reaching an agreement, participants signed a “contract” with the options they chose for each issue. All dyads reached an agreement, with an average negotiation duration of 12 minutes and 30 seconds. Afterwards, participants completed a questionnaire measuring relational outcomes in separate rooms before learning how much extra money they and their counterpart had gained. The study was approved by the local Institutional Review Board.

Observer ratings

Two trained undergraduate students rated three conflict handling styles for each participant separately based on the audio-video recordings on a seven-point scale from 1 (not at all present) to 7 (very much present) (De Dreu et al., 2001). *Forcing* is reflected by pushing one’s own preferences at the expense of the other negotiator and using threats, bluffs, or

persuasive arguments. *Problem-solving* is characterized by actively and flexibly examining the situation from the perspective of both negotiators in order to find a solution that is satisfactory for both. *Compromising* was defined by proposing or accepting solutions that reflect a middle ground on a topic or set of topics without searching for integrative solutions. Two different observers also rated the *positive* and *negative affect* shown by each negotiator (see Supplementary Material for detailed rating instructions). According to Koo and Li (2016), the Intraclass Correlations (computed using the two-way random effects model with consistency criterion for two raters; equivalent to Cronbach's alpha) were moderate for positive affect (.53) and negative affect (.68), good for problem solving (.76) and forcing (.81), and poor for comprising (.42). Compromising was therefore dropped from the analysis. All other scores were averaged between the two raters. Raters were blind to the training condition (TERA versus cloud training) of the participants.

Statistical analysis

The first set of analyses was conducted in order to examine group differences between the two conditions (TERA and cloud training) regarding dyadic points, difference in points between dyad members, self- and other-rated cooperativeness and competitiveness, and observer-rated conflict handling styles and affect. As recommended by Kenny, Kashy, and Cook (2006) for the analysis of one between-dyad independent variable (here, condition), independent-samples *t*-tests were conducted with the dyad averages for all outcomes as the dependent variables (see Table 2).

The second set of analyses aimed to assess the effects of ERA on negotiation outcomes when controlling for the effects of training. A multiple regression with the total points of the dyad as the dependent variable and employees' and recruiters' GERT-S scores, gender, and training condition (TERA versus cloud training) as independent variables was conducted (see Table 3). All other outcome variables (individual points, self- and other-rated

cooperativeness and competitiveness, problem solving, forcing, positive affect and negative affect) were individual-level variables and were analyzed with Actor-Partner Interdependence Models (APIMs) using the APIM_MM app by Kenny (2015). APIMs analyze each person's individual outcome while controlling for the partner's outcome, accounting for the nested data structure and the correlations among dyad members' outcome measures (Kenny et al., 2006). One APIM for each of the outcome variables was run (see Table 4). Each model contained the two negotiators' GERT-S scores (centered using the means and standard deviations of the whole sample), gender, and condition as independent variables. Each model was first run with distinguishable dyad members (i.e., distinguishing employees and recruiters), but tests of distinguishability indicated that there were no benefits in treating the two roles separately for any of the variables. Hence, APIMs with indistinguishable dyad members are reported in Table 4.

Power analysis

For the dyadic analyses of individual outcomes, a power analysis conducted with the APIMpower program (Ackerman & Kenny, 2016) indicated that 38 dyads are needed to detect medium actor and partner effect sizes (beta coefficients) of .30 with a power of .80 and an alpha level of .05, assuming that actor and partner variables are correlated at $r = .30$. For the multiple regression predicting dyadic points, a power analysis conducted with G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) revealed a necessary N of 90 dyads to detect medium effect sizes (beta = .30) for a power of .80 and an alpha level of .05. Similarly, for the independent samples t -tests comparing trained and untrained dyads, 90 dyads are necessary to detect a medium effect size of $r = .30$ for a power of .80 and an alpha level of .05. Thus, with 83 dyads, the present study has a very high sample size for the APIM analyses and is slightly underpowered for the analyses in which scores are averaged for dyad members.

Table 1

Descriptive Statistics and Zero-Order Correlations of all Individual Level Variables.

	1	2	3	4	5	6	7	8	9	10
1. Individual points	4699 (2468)									
2. Cooperativeness self	.01	4.15 (0.57)								
3. Cooperativeness by partner	.02	.31**	4.24 (0.64)							
4. Competitiveness self	.46**	.11	-.11	3.66 (0.81)						
5. Competitiveness by partner	.10	-.08	.01	.24**	3.29 (0.89)					
6. Problem Solving	.11	-.03	.00	.11	.10	3.70 (1.50)				
7. Forcing	.20**	-.17*	-.14	.41**	.47**	.10	3.15 (1.61)			
8. Positive Affect	-.08	.15	.25**	-.22**	-.13	.03	-.08	3.41 (1.08)		
9. Negative Affect	.16*	-.22**	-.21**	.37**	.35**	.07	.61**	-.39**	3.08 (1.14)	
10. GERT-S	-.04	.05	-.03	-.04	-.08	.11	-.05	.18*	-.02	0.71 (.12)
11. Gender (0= male, 1 = female)	-.05	-.06	.01	.02	.06	-.12	.10	-.10	.11	.11

Note. * $p < .05$, ** $p < .01$. Diagonals contain means and standard deviations.

Results

Descriptive statistics and zero-order correlations between all individual-level variables are presented in Table 1.

Training effects on economic, relational, and observer-rated variables. As shown in Table 2, contrary to Hypothesis 1 the TERA group did not achieve significantly higher dyadic gains than the cloud training group; however, as predicted in Hypothesis 3, the difference between dyad members' points was significantly smaller in the TERA group, $t(81) = -2.02$, $p = .047$, Cohen's $d = -0.44$. Partly confirming Hypothesis 2, dyads in the TERA group showed marginally lower self-rated competitiveness, $t(81) = -1.90$, $p = .060$, Cohen's $d = -0.42$, as well as lower other-rated competitiveness, $t(81) = -2.13$, $p = .036$, Cohen's $d = -0.47$, although no differences were found for cooperativeness. In line with Hypothesis 5, dyads in the TERA group were rated as showing more positive affect, $t(81) = 2.18$, $p = .032$, Cohen's $d = 0.48$. The size of these group differences was moderate (Cohen's d close to 0.50). Although not statistically significant, small effects (Cohen's $d > 0.20$) were also found in the expected direction for forcing (TERA < cloud training; Cohen's $d = -0.29$) and negative affect (TERA < cloud training; Cohen's $d = -.24$). Problem solving did not differ between the TERA and cloud training groups; overall there was only limited support for Hypothesis 4.

Table 2

Mean Values for Dyadic Economic, Relational, and Conflict Handling Style Variables and Independent Samples t-Tests Comparing TERA and Control (Cloud Training) Conditions.

Dependent variable	Mean (SD) Cloud Training	Mean (SD) TERA	<i>t</i> (df = 81)	<i>p</i>	Cohen's <i>d</i>
dyad points	9357 (1733)	9439 (1464)	0.232	.817	0.051
difference in point between dyad members	4229 (3344)	2927 (2453)	-2.018*	.047	-0.443
Problem solving	3.70 (1.28)	3.70 (1.14)	-0.027	.978	-0.006
Forcing	3.36 (1.54)	2.94 (1.40)	-1.31	.194	-0.288
Positive affect	3.20 (0.80)	3.63 (1.00)	2.181*	.032	0.479
Negative affect	3.20 (1.08)	2.96 (0.87)	-1.106	.272	-0.243
Self-rated cooperativeness	4.16 (0.43)	4.14 (0.50)	-0.234	.816	-0.051
Other-rated cooperativeness	4.28 (0.40)	4.19 (0.57)	-0.768	.444	-0.169
Self-rated competitiveness	3.79 (0.60)	3.55 (0.56)	-1.904 ⁺	.060	-0.418
Other-rated competitiveness	3.44 (0.71)	3.13 (0.63)	-2.128*	.036	-0.467

Note. * $p < .05$, ⁺ $p < .10$. Relational and conflict style variables are dyad means. Positive Cohen's *d* values indicate a higher mean in the TERA as compared to the cloud training condition. TERA = Training for Emotion Recognition Ability.

Emotion recognition ability as a predictor of negotiation outcomes. Higher GERT-S scores in recruiters predicted higher joint gains for the dyad ($\beta = .377, p = .013$; see Table 3). Higher GERT-S scores also predicted a higher share of the pie within a dyad for the negotiation partner, but not for oneself (partner effect, $\beta = .203, p = .034$, see Table 4). Hypotheses 6 and 7 were thus confirmed. Contrary to Hypothesis 8, relational outcomes (self- and partner-ratings of cooperativeness/ likeability and competitiveness) were largely unrelated to GERT-S scores. Negotiators with higher GERT-S scores engaged in relatively more problem solving than their partners (actor effect, $\beta = .198, p = .047$, see Table 4). However, GERT-S scores were unrelated to individual differences in observer-rated affect or forcing within dyads. Hypothesis 9 was thus partly confirmed and Hypothesis 10 was rejected.

Taken together, the results showed that negotiators' ERA predicted joint and individual economic gains irrespective of whether they received training (i.e., when condition was controlled for; Tables 3 and 4), but that training fostered more egalitarian, or equally distributed, gains within dyads. ERA training also led to lower self- and partner-rated competitiveness; however, neither competitiveness nor cooperativeness were directly predicted by negotiators' ERA when condition was controlled for. Conflict handling styles were directly predicted by negotiators' ERA irrespective of the training condition (in the case of problem solving) but were also to a small extent affected by training (in the case of forcing). Finally, the affective tone of the negotiation was not associated directly with negotiators' ERA when condition was controlled for, but it was substantially more positive when dyads received ERA training. Self- and partner-rated cooperativeness were the only variables not showing any associations with ERA or training. This may be due to a ceiling effect with very high mean values and low variability (Table 1).

Table 3

Multiple Regression Predicting Dyadic Points from GERT-S Scores Controlling for Condition and Gender.

Independent variables	B	Standard Error	95% Confidence Interval	Beta	<i>t</i>	<i>p</i>
Intercept	6979.9	1433.2	[4126; 9833.79]		4.87	< .001
Condition (0= cloud, 1 = emotion recognition)	-.965	523.1	[-2007; 76.66]	-0.303	-1.845	0.069
Gender (0= male, 1 = female)	-.803.8	357.7	[-1516; -91.5]	-0.252*	-2.247	0.028
GERT-S employee	1816.1	1635.6	[-1441; 5072.98]	0.141	1.11	0.27
GERT-S recruiter	5309.2	2093.9	[1140; 9478.75]	0.377*	2.536	0.013

Note. * $p < .05$. Adjusted $R^2 = .067$. GERT-S = Geneva Emotion Recognition Test Short Form.

Table 4

Actor-Partner Interdependence Models Predicting Individual Economic, Relational, and Conflict Handling Style Variables from GERT-S Scores Controlling for Condition and Gender.

Variables	Estimate	95% Confidence Interval	Beta	<i>p</i>	<i>r</i>	R squared
DV: Individual points						
Intercept	5838.354	[4827.991; 6848.718]		<.001		
GERT-S Actor	-1093.023	[-4969.87; 2783.823]	-0.053	.581	-0.044	
GERT-S Partner	4221.716	[360.219; 8083.213]	0.203*	.034	0.163	
gender	-367.227	[-716.413; -18.041]	-0.074*	.041	-0.073	
condition	-399.906	[-901.862; 102.049]	-0.081	.120	-0.055	0.018
DV: Cooperativeness self-rated						
Intercept	4.498	[3.895; 5.102]		<.001		0
GERT-S Actor	0.62	[-0.35; 1.591]	0.13	.212	0.1	
GERT-S Partner	0.092	[-0.859; 1.043]	0.019	.849	0.012	
gender	-0.107	[-0.315; 0.1]	-0.095	.311	-0.091	
condition	-0.127	[-0.428; 0.175]	-0.112	.411	-0.073	
DV: Cooperativeness rated by partner						
Intercept	4.434	[3.793; 5.074]		<.001		0
GERT-S Actor	0.082	[-0.972; 1.135]	0.015	.880	0.011	
GERT-S Partner	0.2	[-0.854; 1.254]	0.038	.710	0.029	
gender	-0.02	[-0.242; 0.201]	-0.016	.858	-0.015	
condition	-0.109	[-0.427; 0.209]	-0.086	.503	-0.057	
DV: Competitiveness self-rated						
Intercept	4.401	[3.651; 5.152]		<.001		0.016
GERT-S Actor	0.529	[-0.827; 1.885]	0.078	.446	0.061	
GERT-S Partner	1.208	[-0.116; 2.533]	0.178 ⁺	.076	0.142	
gender	-0.038	[-0.295; 0.219]	-0.024	.771	-0.023	
condition	-0.468	[-0.843; -0.092]	-0.29*	.016	-0.191	
DV: Competitiveness rated by partner						
Intercept	3.924	[3.045; 4.802]		<.001		0.013
GERT-S Actor	0.223	[-1.219; 1.666]	0.03	.762	0.025	
GERT-S Partner	0.909	[-0.535; 2.352]	0.122	.219	0.098	
gender	0.032	[-0.272; 0.336]	0.018	.836	0.018	
condition	-0.455	[-0.892; -0.019]	-0.258*	.043	-0.174	
DV: Problem solving						
Intercept	5.358	[3.846; 6.869]		<.001		0.026
GERT-S Actor	2.466	[0.05; 4.881]	0.198*	.047	0.16	
GERT-S Partner	1.59	[-0.822; 4.002]	0.127	.198	0.102	
gender	-0.558	[-1.082; -0.035]	-0.188*	.038	-0.184	
condition	-0.543	[-1.293; 0.207]	-0.183	.158	-0.125	
DV: Forcing						
Intercept	3.623	[1.69; 5.556]		<.001		0
GERT-S Actor	0.178	[-2.524; 2.88]	0.013	.898	0.015	
GERT-S Partner	1.069	[-1.641; 3.78]	0.079	.440	0.065	
gender	0.255	[-0.413; 0.924]	0.079	.455	0.076	
condition	-0.569	[-1.529; 0.392]	-0.176	.247	-0.122	

Table 4, continued

DV: Positive affect						
Intercept	3.574	[2.403; 4.744]		<.001		0.03
GERT-S Actor	1.167	[-0.588; 2.922]	0.129	.194	0.105	
GERT-S Partner	0.795	[-0.963; 2.554]	0.088	.377	0.073	
gender	-0.249	[-0.654; 0.156]	-0.116	.229	-0.115	
condition	0.129	[-0.453; 0.71]	0.06	.665	0.041	
DV: Negative affect						
Intercept	3.054	[1.763; 4.345]		<.001		0
GERT-S Actor	0.399	[-1.495; 2.294]	0.042	.680	0.035	
GERT-S Partner	-0.382	[-2.281; 1.517]	-0.04	.694	-0.031	
gender	0.25	[-0.196; 0.696]	0.11	.274	0.106	
condition	-0.237	[-0.878; 0.404]	-0.104	.470	-0.072	

Note. * $p < .05$, + $p < .10$. GERT-S = Geneva Emotion Recognition Test Short Form. Gender: 0 = male, 1 = female. Condition: 0 = cloud training, 1 = Training for Emotion Recognition Ability (TERA).

Discussion

Although a number of ERA trainings have been published in the literature, it remains largely unknown whether they translate into behavioral changes in real-life face-to-face interactions. The main goal of the present study was therefore to examine the effects of a brief self-administered ERA training program on the economic and relational outcomes as well as the conflict handling styles and affective tone in a simulated work contract negotiation. Overall, negotiations were less competitive when the dyads had completed the TERA (Schlegel et al., 2017b) as opposed to a matched control training about cloud types prior to the negotiation: They showed a lower mean difference in points, rated themselves and their partners as less competitive, and were rated as showing more positive affect by external observers. Contrary to our expectations, however, these dyads did not create more value (i.e., did not have higher joint gains). It may be that a higher attunement to the counterpart's interests and feelings made negotiators yield to their partners' requests more easily and to settle, for instance, on the middle options for each topic rather than discussing

several topics in an integrative fashion to identify mutually beneficial package deals. This phenomenon is known as “relational accommodation” (Curhan et al., 2008).

On the other hand, when the effects of training were controlled for—that is, when looking at individual differences in ERA, independent of training group—higher ERA predicted higher joint gains (supporting the results of Elfenbein et al., 2007, and Schlegel et al., 2018) as well as higher observer ratings on problem solving—a constructive conflict handling style characterized by actively searching for integrative solutions. At the same time, in the present study cooperativeness and competitiveness ratings were unrelated to ERA when training effects were controlled for. Thus, “relational accommodation” may predominantly occur when (both) negotiators have been trained on ERA, but less so when negotiators have “naturally” high ERA. It may be that combining the TERA (which did not contain any instructions regarding social interactions or negotiation) with a training regarding constructive negotiation strategies will lead to higher dyadic gains in future studies and prevent a too “harmonious” atmosphere.

Nevertheless, there are many interpersonal contexts in which a harmonious and cooperative atmosphere seems desirable, especially when long-term work or personal relationships are concerned. For example, it might be interesting to investigate whether the TERA also affects outcomes and behaviors in other interpersonal interactions involving dyads (e.g., couples in a counseling or therapy context, doctor-patient dyads, or employee-supervisor dyads) as well as groups (e.g., classes of students, work teams).

To our knowledge, the present study is the first to demonstrate that an ERA training influences behaviors and outcomes in a face-to-face social interaction among healthy adults. Assuming that the main goal of developing such trainings is to enhance real-life outcomes, many more studies examining the predictive validity of each program are needed. This is especially the case as the available trainings differ widely with respect to the modalities

trained and stimuli used (pictures of faces only versus videos with sound; Hurley et al., 2014; Herpertz et al., 2016), as well as the duration and focus (e.g., recognizing micro-expressions versus patients' affect; Hurley et al., 2014; Ruben et al., 2015).

Future studies may also help answer other questions. First, more research is needed to investigate how long ERA training effects—in the present case, on negotiation outcomes—last. One may speculate that participants without prior negotiation experience remember the cooperative atmosphere the next time they negotiate, whereas participants with prior negotiation experience may be less affected by the training in the long run.

Second, it is unknown whether the TERA affects interactions between people who are acquainted, in particular if the interaction is about a topic that both individuals have talked about before (such as a long-lasting disagreement). In acquainted individuals, the relationship prior to the specific interaction may exert an influence that is too strong to be modulated by a brief ERA training. In contrast, in the present study all dyads were unacquainted and started the negotiation with a “clean slate,” potentially increasing the training influence.

Third, the mechanisms through which the TERA affected negotiation behaviors and outcomes in the present study are unknown. As reported by Schlegel et al. (2017b, Study 3), the TERA group showed substantially higher ERA scores than the cloud training group after their respective trainings and before the start of the negotiation. According to Fulmer and Barry (2004), one would expect that the TERA group used this increased accuracy in order to better identify and ponder the interests and preferences of their negotiation partners, leading to offers that were more likely to be accepted and to a more constructive atmosphere. However, it could also be that the TERA primed participants to be more sensitive and alert to emotions in general, leading to a more cooperative behavior that is not necessarily explained by higher nonverbal accuracy. Finally, it could also be that participants in the TERA group acted more cooperatively because they assumed that this is what was expected of them.

Although the instructions in the TERA did not make any links to negotiation and the experimental protocol was standardized, the experimenters were not blind to the training condition of each dyad, creating the potential for experimenter expectancy effects (Rosenthal, 2009).

One way of testing the assumption that the higher ERA performance resulting from the training was used to better understand the other person is to use the empathic accuracy paradigm (Ickes, 2001) in a future study. After the negotiation, participants could be asked to watch the video of their interaction and to state each time they experienced a specific emotion. They would then watch the video again and be asked to identify their partner's emotions at each time point when he or she had indicated an emotion. The correspondence between self- and partner-reported emotions could be used as an indicator of nonverbal and verbal emotion recognition accuracy during the negotiation and should be higher in the TERA group than the cloud training group.

To conclude, the present study demonstrated that a brief computer-based ERA training can change the behaviors and outcomes of interpersonal interactions, which opens up a variety of possible applications in various life domains. In the present case, training made negotiations more cooperative as could be seen from economic gains, negotiators' competitiveness ratings, and observer ratings of affect. From the perspective of negotiation research, these findings add to an emerging literature highlighting the role of emotional intelligence and the accurate perception of nonverbal cues (e.g., Elfenbein et al., 2007; Fulmer & Barry, 2004; Katz & Sosa, 2015; Kong et al., 2011; Schlegel et al., 2018). From the perspective of interpersonal accuracy research, the present study is one of the first to experimentally manipulate accuracy through training and to provide evidence for a causal link between ERA and interpersonal outcomes.

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