

## Reading your Counterpart: The Benefit of Emotion Recognition Accuracy for Effectiveness in Negotiation

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**Abstract** Using meta-analysis, we find a consistent positive correlation between emotion recognition accuracy (ERA) and goal-oriented performance. However, this existing research relies primarily on subjective perceptions of performance. The current study tested the impact of ERA on objective performance in a mixed-motive buyer-seller negotiation exercise. Greater recognition of posed facial expressions predicted better objective outcomes for participants from Singapore playing the role of seller, both in terms of creating value and claiming a greater share for themselves. The present study is distinct from past research on the effects of individual differences on negotiation outcomes in that it uses a performance-based test rather than self-reported measure. These results add to evidence for the predictive validity of emotion recognition measures on practical outcomes.

**Keywords** Emotion recognition · Accuracy · Decoding · Negotiation · Workplace · Performance · Emotional intelligence

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## Introduction

The emotional expressions of others provide information that we can use to make social interactions more predictable and easier to manage. Expressive behavior serves as a window into reactions, intentions, and likely future behaviors. Perhaps due to this broad value, the ability to recognize emotional states accurately through nonverbal expression has been widely studied in clinical, cognitive, developmental, and social psychology. Being able to read others' emotional expressions accurately generally appears to be associated with better social adjustment and mental health (e.g., Carton et al. 1999; Nowicki and Duke 1994; Rosenthal et al. 1979). The present study extends the current research literature on emotion recognition accuracy (ERA) by examining its impact on objective outcomes in negotiation, a setting that can be highly emotional and in which real-life stakes can be high.

The construct of emotion recognition has been theorized to be one of the core components of the larger concepts of emotional intelligence (EI; Matthews et al. 2002; Mayer et al. 1990) and affective social competence (Halberstadt et al. 2001; Saarni 2001). ERA is perhaps the most basic and fundamental component of the recently proposed four-branch model of EI (Mayer et al. 2001), and the one for which large-scale psychometric studies have provided some of the most consistent evidence for reliability (e.g., Ciarrochi et al. 2000; Davies et al. 1998). Within the broad concept of interpersonal sensitivity—defined as “the ability to sense, perceive accurately, and respond appropriately to one’s personal, interpersonal, and social environment” (Bernieri 2001, p. 3)—the recognition of emotional states from nonverbal expressions is one of many categories of interpersonal judgments that can have important consequences for both the perceiver and the perceived. Friedman (1979) argued that a focus on such nonverbal skills represents a shift from cognitive toward affective aspects of social interaction, as well as a shift from personality to tangible skill—in that the nonverbal communication of emotion can be accurate or inaccurate.

Individuals high in emotion recognition skill presumably are more accurate in obtaining information about other people’s internal states, and they can use this information to navigate their social worlds. Correspondingly, researchers have long found that skill in emotion recognition generally predicts better workplace effectiveness in contexts as diverse as supervisory status for business executives from national industrial corporations, leadership skills for elementary school principals, job ratings for human service workers and teachers, counseling outcomes for therapists, ratings from patients and supervisors in medical settings, and academic performance for children (e.g., DiMatteo et al. 1979; Halberstadt and Hall 1980; Nowicki and Duke 1994; Rosenthal et al. 1979).

For this paper, we reviewed research that provided an estimate of the correlation between emotion recognition accuracy and workplace performance for adult samples. Table 1 summarizes these studies. This list was collected (a) using electronic searches of the electronic databases *PsychInfo*, *ABI/Inform*, and *Business Source Premiere* using the terms “emotion recognition” or “emotion perception” and “workplace”, “organization”, or “organizational” as of November 2005, (b) checking references of sources obtained from the first method, and (c) searches of the *Social Science Citation Index* for articles that reference the usable sources obtained from the first two methods. The resulting collection of 18 studies represents a total of 1,232 participants. The majority of studies have used Rosenthal and colleagues’ (1979) Profile of Nonverbal Sensitivity (PONS) test that contains a combination of sound clips and video clips with and without sound. Two studies used Nowicki and Duke’s (1994) Diagnostic Analysis of Nonverbal Accuracy (DANVA)

**Table 1** Summary of research on emotion recognition accuracy and workplace effectiveness

Source	Sample	Effect size ( <i>r</i> )	<i>N</i>	<i>p</i>	Measure of emotion recognition	Measure of workplace effectiveness
1. Burruss (1977)	Therapists specializing in alcoholism treatment	.36	43	.02	PONS <sup>a</sup>	Peer and staff ratings of effectiveness and sensitivity
2. Campbell et al. (1971)	Counseling student interns	.26	77	.02	Videotapes of actual therapy sessions	Peer and staff ratings of counselor effectiveness
3. Costanzo and Philpott (1986)	Undergraduate students	.45	40	<.01	Social Interpretations Task <sup>b</sup>	Assessment of therapeutic talent based on written test of counseling skill
4. DiMatteo et al. (1979)	Physicians	.16	64	.20	PONS <sup>a</sup>	Patients' ratings of satisfaction with treatment
5. DiMatteo et al. (1986)	Physicians	.08	28	.70	Half-PONS <sup>a</sup>	Patient satisfaction ratings, appointment compliance, physician patient load
6. Eifenbein and Ambady (2002)	Public service interns	.22	69	.07	DANVA <sup>c</sup>	Performance evaluations by staff and peers 9 months later
7. Hill et al. (1981)	Doctoral students role-playing counseling	"not significant", presumed zero	40	1.00	PONS <sup>a</sup>	Assessment of counseling performance
8. Lee et al. (1980)	Doctoral students role-playing counseling	-.14	34	.41	PONS <sup>a</sup>	Ratings of perceived effectiveness of mock clinical interviews
9. McClelland and Dailey (1979) Sample 1, reported in Rosenthal et al. (1979)	Human service workers' job ratings	.13	85	.25	Audio PONS <sup>a</sup>	Job performance ratings
10. McClelland and Dailey (1979) Sample 2, reported in Rosenthal et al. (1979)	Foreign service officers	.29	82	.01	Audio PONS <sup>a</sup>	Officer performance ratings

Table 1 continued

Source	Sample	Effect size ( <i>r</i> )	<i>N</i>	<i>p</i>	Measure of emotion recognition	Measure of workplace effectiveness
11. Person (1979), reported in Rosenthal et al. (1979)	Elementary school principals	.21	28	.28	PONS <sup>a</sup>	Judgment of satisfactory leadership by teachers in their schools
12. Phillips and Reavis (1979), reported in Rosenthal et al. (1979)	School teachers	.38	75 <sup>d</sup>	<.01	PONS <sup>a</sup>	Supervisor and outside rater judgments of teaching ability and student encouragement
13. Rosenthal et al. (1979), Sample 1	Business executives	.34	36	.04	PONS <sup>a</sup>	Supervisory status level at corporation
14. Rosenthal et al. (1979), Sample 2	Clinicians	.26	48	.08	PONS <sup>a</sup>	Expert judgments of clinical effectiveness
15. Rosenthal et al. (1979), Sample 3	Clinicians	.17	195	.02	PONS <sup>a</sup>	Ratings of interpersonal sensitivity by supervisors, clients, or colleagues
16. Rubin et al. (2005)	Business managers	.17	145	.05	DANVA <sup>c</sup> , faces subtest only	Subordinates' ratings of leadership
17. Schag et al. (1978)	Adults in counseling settings	.26	40	.11	Social Interpretations Task <sup>b</sup>	Assessment of therapeutic talent based on written test of counseling skill
18. Tickle-Deغن (1998)	Medical interns	.03	103	.80	PONS <sup>a</sup>	Supervisor ratings of effectiveness
Total		.20	1,232	<.01		

Note: Effect sizes listed are correlation coefficients (*r*). All significance values two-tailed

<sup>a</sup> PONS, Audio PONS, and Half-PONS tests from Rosenthal et al.'s (1979) Profile of Nonverbal Sensitivity, including video clips and audio clips containing expressive behavior

<sup>b</sup> The Social Interpretations Task (Archer and Akert 1977) consists of video clips with expressive behavior

<sup>c</sup> The DANVA test (Nowicki 2000) consists of facial expressions and vocal tones of emotion

<sup>d</sup> The sample size is not listed. However, from the exact *p*-values reported, one can calculate approximately *n* = 25 in each of 3 samples

test that contains sound clips and still photographs of facial expressions, two studies used Archer and Akert's (1977) Social Interpretations Task containing video clips, and one study used videotapes of actual patient-therapist interactions.

Using meta-analytic techniques for combining results across studies (Rosenthal 1991), the average size of the effect across these 18 studies is  $r = .20$  (Stouffer's  $Z = 5.30$ ,  $p < .01$ ). Although visual inspection of the individual studies suggests some variation in effect sizes, a formal analysis of the degree of heterogeneity across studies (Hedges and Olkin 1985; Rosenthal 1991) does not reveal significant variance,  $\chi^2(17) = 18.78$ , *ns*. Taken together, these results suggest that the ability to understand others' emotions is a modest but significant and consistent predictor of individual success in organizational settings.

One limitation of this past work, evident in the final column in Table 1, has been its reliance primarily on subjective rating measures of individual performance. It is possible that an actor's ERA directly influences raters' perceptions of an actor's performance, in addition to—or even instead of—having a direct effect on the actor's objective performance. Indeed, in their review of children's academic performance, Halberstadt and Hall (1980) found that the children's ERA was more closely related to their teachers' subjective evaluation of achievement than it was to objective academic tests. Among the adult samples listed in Table 1, only three relied on objective measures of performance. Two (Costanzo and Philpott 1986; Schag et al. 1978) assessed counseling talent based on a written test rather than an interpersonal interaction—although a history of successful patient interactions could certainly contribute to better performance on a written test. A third exception (Rosenthal et al. 1979, Sample 1) assessed performance for business executives using their supervisory level—which, although itself objective, is based on job promotions due to performance appraisals of unknown objectivity.

The goal of the current study is to address this gap in the current body of evidence by examining the relationship between emotion recognition accuracy and an unambiguously objective measure of effectiveness in a goal-oriented interpersonal interaction. This goal encompasses more than a methodological extension of past work. Rather, it helps to articulate the underlying mechanism of the association between ERA and performance outcomes. Does emotion recognition accuracy provide individuals with a tool to help them manage goal-oriented interpersonal interactions? Or does the relationship between ERA and performance ratings result from liking and halo effects on the part of raters who might perceive the same level of performance more positively when rating a colleague high in ERA? The current study uses a negotiation setting in order to disentangle these alternatives.

### Emotion Recognition in Negotiation

Negotiation can be a highly emotional arena (for reviews, see Barry et al. 2004; Kumar 1997). The process of working through a potential settlement can be infused with a wide range of emotions—for example, pleasure and displeasure, surprise, fear, and anger. During a negotiation, the emotions that each person expresses might or might not be perceived accurately by his or her counterpart. Moreover, negotiation is an environment in which success often depends on the ability to communicate, exchange information, and make accurate social judgments (e.g., Bazerman and Carroll 1987; Neale and Northcraft 1991; Pruitt and Carnevale 1993; Thompson 1991; Thompson and Hastie 1990).

There is an inherent tension between creating joint value for all negotiators to share—by making tradeoffs that address the most important concerns of each party at the expense of

less important concerns—and claiming value for oneself (Lax and Sebenius 1986). In this sense, many negotiations are *mixed-motive* interactions, involving elements of both cooperation and competition between two parties (Thompson 1998). It is important to exchange enough information to accomplish the former goal, yet to hold back enough information to succeed at the latter goal. Negotiation counterparts are often reluctant to share too much information with each other for fear of becoming vulnerable. For example, revealing priorities to a partner who does not reciprocate can push a negotiator towards making concessions on those issues declared to be less important, without necessarily receiving a valuable concession in return. Inappropriately revealing too much information about one's best outside alternative could lead a counterpart to offer only the smallest margin above the value of that alternative. Effective negotiating requires parties to develop an understanding of their counterparts' interests and preferences, in a context in which such information may be explicitly hidden but implicitly revealed. For these reasons, the ability to attend to subtle communication signals may be beneficial to negotiators, and could help guide or impede a potential settlement.

Negotiation provides an ideal forum for research attempting to disentangle the relationship between ERA and performance outcomes for two reasons. First, negotiation exercises for use in laboratory and classroom settings have objective scoring systems, in which each participant receives a score sheet outlining the points achieved under each allowable option for the issues covered by a potential settlement. Second, the mixed-motive nature of negotiation allows researchers to examine an individual participant's effectiveness at both the cooperative and competitive elements of this goal-directed interpersonal interaction. The objective scores can be examined both in terms of the total points achieved by the dyad—that is, the cooperative element, or creating value—and the proportion of total points that each negotiator received—that is, the competitive element, or claiming value.

As discussed above, previous research relating ERA to effectiveness in workplace-relevant domains relied heavily on perceptual ratings from judges rather than unambiguously objective interpersonal performance. To extend this work to objective performance is a methodological advance that also has implications for the mechanisms underlying the relationship between ERA and outcomes. If the relationship holds only for perceptual outcomes, then it can be argued that it results from the judgments of raters, who may be more favorably inclined and perhaps lenient towards those with better emotional skills. However, if the relationship holds also for objective outcomes then the effect is more likely to reside in the behavior of the actor rather than the judgment of the rater, with high ERA individuals using this skill to engage more effectively in their actual work tasks.

## Method

### Participants

Participants were undergraduate business students of Chinese ancestry at the National University of Singapore. The 164 participants included 76 males and 88 females with a mean age of 21.5 ( $SD = 3.1$ ). Each received course credit for taking part in both sessions, as part of a class on Management and Organization. In addition, each was paid between S\$5 and S\$16 (the equivalent of approximately US\$3 and US\$9 respectively;  $M = S\$6.40$  [US\$3.58],  $SD = S\$2.40$  [US\$1.33]), based on the number of points scored in the

negotiation exercise. All procedures were conducted in English, which is the official language of Singapore and the language of academic instruction.

### Negotiation Exercise

After arrival at the laboratory in groups of various sizes, participants were randomly assigned to negotiate with a partner. Consistent with a standard practice in negotiations research, all dyads were same-gender (Kray and Thompson 2005). Participants were asked to request reassignment to a new partner if the two were previously acquainted. There were 82 pairs in total.

Participants took part in a negotiation exercise adapted from Thompson (1990a), consisting of four different issues on which the parties had to agree, including one distributive issue (in which gain to one party was exactly equal to loss to the other party), one compatible issue (in which both parties shared the same preferences), and two issues with integrative potential for which it was optimal to make tradeoffs between the two parties (in which one issue was more important to one party, and the other issue was more important to the other party, and therefore points were optimized through log-rolling). Appendix 1 lists the points that participants received for each possible agreement on each issue and Appendix 2 contains the instructions for participants. The stated goal of the exercise was to complete a simulated transaction for the purchase of specialty industrial light bulbs. One participant was assigned randomly to the role of purchasing manager at a fictional company called Acme Industries, and the other participant in each dyad was assigned the role of sales manager at Gamma Industries. Each received only the instructions and payoff grid for their own role, which they were allowed to keep during the exercise but not to share directly with their counterpart. For each participant, the best alternative to reaching an agreement with their partner was zero points, which meant that any settlement was preferable to an impasse and there was a wide bargaining zone for possible agreements. Consistent with this fact, all pairs taking part in the exercise reached a settlement, which consisted of agreeing on one of the listed options for each of the four issues.

### Emotion Recognition Accuracy

Two weeks after the negotiation exercise, participants returned to the laboratory to complete a measure of emotion recognition accuracy developed in Singapore. In spite of classic research demonstrating that expressions of basic emotions can be recognized universally across cultures at rates better than that predicted by random guessing alone (Ekman 1972; Izard 1971), the recognition of emotion has important cross-cultural differences as well (Mesquita et al. 1997; Russell 1994). Indeed, recent evidence has documented that there is an in-group advantage in ERA, whereby judgments of emotional states are generally more accurate when the perceiver is a member of the same cultural group in which the emotional expression originated (Elfenbein and Ambady 2003). Thus, it is optimal to test ERA using stimulus materials that are consistent with the cultural background of the participants.

The measure was Elfenbein et al.'s (2006) collection of Singaporean facial expressions. Elfenbein et al. (2006) used Kenny and LaVoie's (1984) Social Relations Model to demonstrate that there are reliable individual differences in ERA when judging this

collection of photographs. The set was developed using methods for creating stimuli based on previous research on emotion recognition (e.g., Nowicki and Duke 1994; Wang and Markham 1999), in which participants attempted to pose expressions freely while imagining previous occasions during which they felt the corresponding emotional states strongly. Due to time constraints, we randomly selected half of the Chinese photographs in this collection, for a total of 3 male and 3 females posing anger, fear, disgust, happiness, sadness, surprise, and neutral expressions.

Additional pilot tests, sampling participants from the same population as those above, provided further data to suggest that judgments of the resulting photographs were valid as a measure of ERA. First, outside observers (15 women, 19 men) could recognize the intended state in the photographs with 50% accuracy, suggesting that there is a wide enough range to avoid both floor and ceiling effects. Further, outside observers (4 women, 4 men; Cronbach's alpha reliability = .89) rated the intensity of photographs for each emotional category, yielding ratings that were an average of 1.1 standard deviations more intense in the intended emotional category than in the alternate categories.

Each of the 164 participants in the current study—who were distinct from those taking part in the posing sessions and pilot tests—individually viewed the photographs using a computerized task (SuperLab 1999). Each participant viewed all 42 photographs, in a randomized order differing for each participant. The photograph remained on the screen until the participant entered a permitted response, which was a forced-choice among anger, fear, disgust, happiness, neutral, sadness, and surprise. Although some tests of emotion recognition limit the amount of time during which participants may view stimuli, this practice is intended to avoid ceiling effects in those tests that use stimuli pre-selected to be exceptionally recognizable (e.g., Matsumoto et al. 2000).

Emotion recognition accuracy was calculated using Wagner's (1993) formula for unbiased hit rates. Unbiased rates are considered the most appropriate measure of accuracy in categorical judgment studies, because percentage scores incorporate participant response bias (Banse and Scherer 1996; Rosenthal 1987; Wagner 1993). Wagner's unbiased hit rate is the proportion accuracy multiplied by one minus the rate of false alarms, normalized using an arcsine transformation. This correction makes use of signal detection methods (Wagner 1993). Values range from a minimum of zero to a perfect score of 1.57, which is the arcsine of 1—the value obtained under complete detection with zero false alarms.

### Personality Measures and Additional Control Variables

At the same session during which participants completed the ERA measure, they also completed several personality inventories and additional control measures. Participants completed the NEO-IPIP containing 10-item scales per trait (Goldberg 1999) for Neuroticism ( $\alpha = .86$ ), Extraversion ( $\alpha = .86$ ), Openness to Experience ( $\alpha = .82$ ) and Conscientiousness ( $\alpha = .81$ ) using a response scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Further, to separate conceptually the recognition of emotion from its expression, participants completed an emotional expressiveness scale from the Affective Communications Test developed by Friedman et al. (1980). The 13-item scale consists of statements such as “when I hear good dance music, I can hardly sit still.” Participants also reported their gender as well as their “O-level” examination scores as a measure of academic performance, an exam that corresponds roughly to the United States SAT subject examinations (formerly known as the SAT II or College Board Achievement exams).



**Table 2** Means, standard deviations, and correlations among predictor and outcome variables ( $N = 164$  individuals)

Variable	M	SD	1	2	3	4	5	6	7	8
Emotion recognition accuracy										
1. Emotion recognition accuracy	.24	.06								
Negotiation outcomes										
2. Exercise points	\$115,273	\$24,359	.06							
Control variables										
3. Female	.52	.50	-.02	-.07						
4. Emotional expressiveness scale	4.20	.57	.03	-.13*	-.06					
5. Neuroticism	3.75	.57	.01	.11~	-.02	-.13*				
6. Extraversion	4.45	.86	.08	-.11~	-.03	.62**	-.19**			
7. Openness	4.98	.67	.07	-.13*	.01	.37**	-.17*	.33**		
8. Conscientiousness	4.47	.74	-.03	.04	.07	.22**	-.09	.14*	.21**	
9. O-level exam scores	12.14	3.69	-.14*	-.09	-.05	.00	.00	.07	.14*	.03

~ $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ . All values two-tailed

## Results

Table 2 lists the correlations among measures for each individual, including both buyers and sellers together. However, for the purpose of testing the current hypothesis—that greater emotion recognition accuracy (ERA) is associated with objectively greater performance in both the cooperative and competitive aspects of negotiation—outcome data are interdependent both statistically and conceptually for the two members of each dyad. For this reason, we test hypotheses at the dyadic level. In keeping with the hypothesis that greater ERA is associated with objectively greater performance in both the cooperative and competitive aspects of negotiation, we use two different scores for negotiation outcomes. For cooperation, we examine the total points of the dyad, which serves as a measure of the joint value or integrative component of effectiveness. For competition, we examine the proportion of value claimed by the seller, normalized using an arcsine transformation, which serves as a measure of the distributive component of effectiveness. The benefit of this analytical approach is that—although the dyad is technically the unit of analysis in keeping with the underlying statistical interdependence of the data—it illustrates the impact of individual differences on each individual's negotiation outcomes.

### Preliminary Analyses

In order to prevent a proliferation of control variables for the buyers and sellers, we conducted preliminary analyses to facilitate hypothesis testing. We ran four control models that consisted of multiple regression analyses examining the relationship between control variables separately for the buyer and sellers for the two negotiation outcome measures. No control measures were significant predictors. Because seller neuroticism was a marginal

**Table 3** Integrative and distributive gain and negotiation process variables in a scorable negotiation, as a function of Emotion Recognition Accuracy (ERA)

Buyer	Seller high ERA		Seller low ERA	
	High ERA	Low ERA	High ERA	Low ERA
<i>A. Integrative value: Dyad total points</i>				
<i>M</i>	\$242,500	\$236,333	\$225,093	\$221,988
<i>SD</i>	\$17,715	\$18,794	\$29,175	\$36,221
<i>B. Distributive value: seller proportion of dyad points</i>				
<i>M</i>	.53	.52	.50	.48
<i>SD</i>	.11	.10	.07	.10

Notes:  $N = 164$  individuals, 82 dyads

predictor of claiming a greater proportion of value ( $\beta = .28, p < .09$ ), both seller and buyer neuroticism were included in hypothesis testing.

### ERA and Negotiation Outcomes

We tested the hypothesis by performing a median split on emotion recognition accuracy scores to account for their non-normal distributions (Table 3). We entered these terms in multiple regression models that included seller neuroticism, buyer neuroticism, seller ERA, buyer ERA, and the interaction between the seller and buyer ERA. In keeping with the hypothesis, high ERA on the part of sellers was associated with greater creation of value,  $\beta = .30, p < .01$ , and a marginally greater proportion of that value being claimed by the seller,  $\beta = .22, p = .06$ . However, in the case of those participants randomly assigned to the role of buyers, no such relationship was evident ( $\beta = .10, ns$ , in both models). The interaction term was not significant in either model ( $\beta = -.01, ns$ , and  $\beta = -.05, ns$ , respectively) (Table 4).

### Discussion

This article began with a meta-analysis highlighting that previous research relating emotion recognition accuracy (ERA) to effectiveness in workplace-relevant domains relied heavily on perceptual ratings from judges rather than unambiguously objective interpersonal performance. This has left open the possibility that high ERA individuals merely benefit from a halo effect of being judged as having greater performance because raters are more favorably inclined towards those with better emotional skills, at the same time that their actual performance may or may not differ from that of their low ERA peers.

Thus, the present research aimed to test the hypothesis that emotion recognition accuracy is associated with objectively greater performance in a goal-directed interpersonal interaction. In a mixed-motive negotiation exercise, participants from Singapore assigned at random to the role of seller who were high in ERA both cooperated more effectively to create greater value for the pair and also competed more effectively to capture a greater proportion of the value for themselves. Thus, it is not simply that perceptions of performance were better, but rather performance itself was actually better. The

**Table 4** Multiple regression illustrating impact of Emotion Recognition Accuracy (ERA) on negotiation outcomes

	Model 1 Integrative Joint value	Model 2 Distributive Proportion to seller
Control variables		
Buyer's neuroticism	.16	.09
Seller's neuroticism	.06	.19~
Emotion recognition		
Buyer ERA	.10	.10
Seller ERA	.30**	.22+
Seller ERA × Buyer ERA	-.01	-.05
Model diagnostics		
<i>F</i> -test of model	<i>F</i> (5, 76)	<i>F</i> (5, 76)
Value of <i>F</i>	1.85	1.60
R-squared	.11	.10
Adjusted R-squared	.05	.04

Notes: *N* = 164 individuals, 82 dyads

Proportion to seller is Arcsine transformed

~*p* < .10; +*p* < .06, \**p* < .05; \*\**p* < .01. All values two-tailed

size of these standardized beta effect sizes, while modest at .30 and .22 for cooperative and competitive outcomes, respectively, are comparable to the average effect size of .20 found in the initial meta-analytic review.

These results add to evidence for the predictive validity of emotion measures developed in the laboratory on practical outcomes. Among such measures, emotion recognition accuracy is particularly worthy of attention because it is based on actual performance instead of self-reported emotional tendencies. Thus, ERA is less prone to self-presentation bias, and less dependent on the somewhat paradoxical need for individuals to have self-awareness of their own emotional skills in order to report them accurately. Using an objectively scored task to measure performance suggests that the link between high ERA and goal-oriented performance results from more effective behavior on the part of the actor rather than bias on the part of the rater.

A second contribution of the current work is to provide support for emotion recognition accuracy as an individual difference that predicts negotiation performance. Although we used the negotiation context as a means to study objectively measurable performance measures for a goal-directed interpersonal interaction, the ability to negotiate effectively is itself an important workplace performance domain and the subject of an extensive research literature. Indeed, in spite of the common intuition that some people are better negotiators than others, the scholarly search for individual differences that are reliable predictors of negotiation effectiveness has been challenging and often elusive (Barry and Friedman 1998; Thompson 1990b). At one point large-scale review articles concluded that there is only a minimal role of personality and other measures in predicting negotiation outcomes (Hamner 1980; Thompson 1990b). However, there have been some promising more recent exceptions to the earlier pattern of frustration and null findings (e.g., Barry and Friedman 1998; De Dreu et al. 1999; Forgas 1998; White et al. 2004). We speculate that individual

differences in emotion recognition accuracy may be linked to negotiation performance because the ability to comprehend subtle communication signals could be a beneficial skill that provides relevant information to negotiators as they work towards potential settlements.

One puzzling finding to emerge from the study is that the hypothesized relationship between ERA and negotiation performance was supported for those participants randomly assigned to the role of sellers—but not buyers. We note that other recent research on individual differences and negotiation has also found emotional traits that are predictive of outcomes for only one member of a dyad (Anderson and Thompson 2004; White et al. 2004), and that offer a related speculation for this observation in our results. Negotiators in classroom simulations tend to follow the same scripts as they would in “real” negotiations (Brett and Okumura 1998). In a typical supplier/purchaser negotiation in Singaporean society, sellers generally make offers, whereas buyers generally evaluate the offers and either accept or reject them. Thus, we speculate that sellers in this negotiation could have been more likely than buyers to control the flow of offers. Empirically, dyads with sellers high in ERA created value by recognizing the compatible issue and by exchanging concessions on the two integrative issues in the negotiation. Sellers in those dyads were able to capture virtually all the value that was created by this process. If sellers exerted more control over the process than they—and not buyers—would have been in a position to use their ERA to read information about their counterpart’s preferences bargaining range, and to craft offers that were ultimately to their advantage. The buyer’s ERA would have been useful only to the extent of guiding the buyer’s acceptance or rejection of the seller’s offers. This speculation would be worthwhile to test directly in further work.

### Limitations and Future Research

This study has a number of important weaknesses and limitations that will be worthwhile to address in future work.

#### *Emotion Recognition Measure*

We measured emotion recognition accuracy using a set of stimulus materials that were recently developed in Singapore, due to the need for congruence between the cultural background of participants and that of the stimulus materials. However, these stimuli included items that are less clear and intense than other measures of ERA, and the inclusion of some test items that were ambiguous or potentially poor enactments may have added measurement error and thus decreased the power of the current findings. Future research should use more longstanding validated tests of ERA. It would also be worthwhile to vary the order of the ERA exercise and other measures to account for potential order effects. In addition, future work should aim to move beyond still photographs and to test emotion recognition skill as closely as possible to the natural process as it occurs outside of the laboratory, as the skill is actually used in real-time interactions. Facial expressions were selected for use in this study because the face is more controllable and thus the primary canvas used to express distinct emotions nonverbally, compared with expression via vocal tone and body posture and movement (DePaulo 1992; Ekman 1965). During a negotiation, parties are often motivated to hide their expressions of emotion, and therefore their emotions are likely to leak out through the other, less controllable, nonverbal channels.

Thus, we would expect that future work using additional measures of nonverbal behavior would be valuable and may even yield stronger results.

### *Greater Inclusion of Contextual Background*

As with the dominant paradigm of research on negotiation, this study involved participants who were previously unacquainted, and who were not expected to have a relationship after the duration of the study. Although this generally serves to isolate more clearly the phenomenon being examined, it has also been argued that these methods can understate the importance of context (Barley 1990). Particularly for the study of emotion in negotiation, it is valuable in further research also to sample participants who have an intact working relationship, or who can expect to interact again in the future. An additional source of context is that in which emotional expressions take place. A smile might serve as a signal of friendliness or aggression, depending on the situation.<sup>1</sup> It would be valuable to conduct research in a setting in which emotional expressions and attributions are examined based on an actual interaction—rather than a standardized test, as in the current work—and the context in which these expressions appear can also be included in the investigation.

### *Opening the Black Box*

Additional work is needed to open the black box of the ERA-performance relationship and to map and test in detail the underlying mechanism. Throughout decades of research on the association between emotion recognition accuracy and important outcome variables, the implicit but untested mechanism has been *behavior*: those individuals who are more accurate are able to use the information they gain from reading others' emotional expressions in order to behave more appropriately. Perception is for doing (Gibson 1979): it is not merely that people understand emotional expressions, but rather it is what they do with that information, that makes them more effective.<sup>2</sup> Such a notion fits with theoretical traditions focusing on the value of understanding others' emotions as a means of facilitating effective interpersonal behaviors (DePaulo and Friedman 1998; Ekman 1992; Keltner and Haidt 1999; McArthur and Baron 1983). Our results support the link between ERA and behavior, and suggest that the actor's behavior, and not merely the perceiver's bias, explains improved performance. However, we must acknowledge that in an interactive task such as negotiation, the perceiver's behavior contributes to the actor's performance. The perceiver's bias could, moreover, contribute to the perceiver's behavior. In other words, it is possible that if people with high ERA are perceived as better performers, that their counterparts adjust their behavior accordingly. Future work should examine at a detailed level differences in the interpersonal process used by those individuals high and low in ERA, and should take into consideration the behaviors of social interaction partners.

### *Generalization Across Cultural Background and Sex*

Like all research that is conducted within a single cultural setting, the current results may or may not generalize to participants from other cultural backgrounds. Indeed, this is the first study to our knowledge that examines the workplace-relevant impact of emotion recognition in a non-western sample, which expands evidence for the generality of past

<sup>1</sup> We thank an anonymous reviewer for this point.

<sup>2</sup> The authors gratefully acknowledge Abigail Marsh's contribution to this discussion.

work. A related concern is the limited applicability of the present findings based on the use of same-sex pairs.

### Implications for Emotional Skills

The current findings contribute evidence of the predictive validity of a performance-based measure of emotion recognition accuracy on a goal-directed interpersonal outcome. Emotion recognition is directly connected with the broader concepts of emotional intelligence (Matthews et al. 2002; Mayer et al. 1990), affective social competence (Halberstadt et al. 2001; Saarni 2001), and interpersonal sensitivity (Riggio 2001). Thus, by extension, these results contribute to empirical evidence for the practical influence of the skills within these broader theoretical contexts. Further, given the real-life importance of negotiation skill as well as recent interest by negotiations researchers in the role of emotion, it is worthwhile to expand the body of research that can evaluate how emotional skills may contribute to the success and failure of reaching effective agreements.

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## Appendix 1

Schedule of negotiation exercise points

Decision	Value to Acme	Value to Gamma
<i>Price</i>		
\$10,000	\$90,000	\$0
\$40,000	\$60,000	\$30,000
\$70,000	\$30,000	\$60,000
\$100,000	\$0	\$90,000
<i>Delivery time</i>		
One week	\$40,000	\$40,000
Two weeks	\$20,000	\$20,000
Three weeks	\$0	\$0
<i>Installation</i>		
Full installation	\$40,000	\$0
Limited installation	\$20,000	\$2,500
No installation	\$0	\$5,000
<i>Payment time</i>		
One week	\$0	\$40,000
Two weeks	\$2,500	\$20,000
Three weeks	\$5,000	\$0

## Appendix 2: Instructions for Negotiation Exercise

### Version A: Sales Manager

In this exercise, you are a sales manager at a company called Gamma Industries.

Your goal is to negotiate the sale of a shipment of light bulbs to the Purchasing Manager at Acme Industries. These are not ordinary light bulbs, so you cannot sell them to most customers. As far as you know, Acme is one of only two customers to use this type of light bulb. You have already talked to the other possible customer, Peter Industries, and they are only willing to pay \$10,000 for the shipment. You believe this is not enough money, and you are hopeful that you can sell them at a higher price to Acme Industries instead. You do not know how many other suppliers Acme Industries might have for these light bulbs.

You would like to sell the light bulbs to Acme Industries at the highest price possible. However, price is not your only consideration. You also care about the delivery time, installation, and payment time.

### Delivery Time

You need to deliver the light bulbs as soon as possible. Your warehouses are full, and you need the storage space. The longer Acme waits for delivery of the light bulbs, the more costly it is for you because you will need to spend money renting additional storage space to hold the light bulbs.

### Installation

You need to charge extra money if you will install the light bulbs for Acme Industries, because this is an extra expense for you to provide this service. You can provide Acme with a “Full installation” or “Limited installation” service, depending on how much they are willing to pay.

### Payment Time

You would prefer for Acme to pay you in one week, so that you can use the money to pay your own suppliers as soon as possible. This is very important to you.

Although you believe it is preferable to reach an agreement with Acme Industries, it is not compulsory. If the deal with Peter Industries is a better alternative, then you can choose that instead. Peter Industries would buy the light bulbs for \$10,000, with three weeks delivery time, full installation, and payment due in three weeks.

If you reach a deal with Acme Industries, then your score for this negotiation is as follows: [see Appendix 1 for schedule of points].

### Version B: Purchasing Manager

In this exercise, you are a purchasing manager at a company called Acme Industries.

Your goal is to negotiate the purchase of a shipment of light bulbs from the Sales Manager at Gamma Industries. These are not ordinary light bulbs, so you cannot buy them

from most stores. As far as you know, Gamma is one of only two suppliers with this type of light bulb available. You have already talked to the second supplier, Omega Industries, and they want \$100,000 for the light bulbs. You believe this is too much money, and you are hopeful that you can pay a lower price to Gamma Industries instead. You do not know how many other customers Gamma Industries might have for these light bulbs.

You would like to buy the light bulbs from Gamma Industries at the lowest price possible. However, price is not your only consideration. You also care about the delivery time, installation, and payment time.

### Delivery Time

You need the light bulbs as soon as possible. The longer Gamma waits to deliver the light bulbs, the more costly it is for you because you will need to spend money renting additional lighting equipment for temporary use in those rooms that need new light bulbs.

### Installation

You would prefer that Gamma Industries installs the light bulbs for you, because you do not have enough staff members who are trained in the necessary safety procedures. If Gamma cannot provide you with their “Full installation” option, then the “Limited installation” would still be better than nothing. This is very important to you.

### Payment Time

You would prefer to pay Gamma in three weeks, so you can keep the money earning interest in your accounts for as long as possible.

Although you believe it is preferable to reach an agreement with Gamma Industries, it is not compulsory. If the deal with Omega Industries is a better alternative, then you can choose that instead. Omega Industries would sell you the light bulbs for \$100,000, with three weeks delivery time, no installation, and payment due in one week.

If you reach a deal with Gamma Industries, then your score for this negotiation is as follows: [see Appendix 1 for schedule of points].

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