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Teachers' emotional intelligence and self-efficacy: Mediating role of teaching performance

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We investigated the relationship between teachers' emotional intelligence (EI) and self-efficacy, and tested whether this relationship was mediated by teaching performance. Participants were 467 Chinese middle school teachers (312 women; 66.8%). They completed 3 questionnaires relating to EI, self-efficacy, and teaching performance. The results showed that the total effect of EI on self-efficacy was .61, indicating that higher EI is positively correlated with a higher level of self-efficacy. This relationship was partially mediated by teaching performance. In the mediating model for teaching performance, the direct effect of EI on teachers' self-efficacy was .23 and the mediating effect of teaching performance on the relationship between EI and teachers' self-efficacy was .45. In addition, both the direct and mediating effects were invariant across gender and teaching experience. These results indicate that an increase in EI largely enhances teachers' self-efficacy only when emotional skills are successfully used to improve teachers' performance.

Keywords
teachers' emotional intelligence; teachers' self-efficacy; teaching performance; middle school teachers

Over the past few decades, researchers have acknowledged the importance of *teachers' self-efficacy*, namely, the extent to which teachers believe in their capability to influence student performance (Tschannen-Moran, Hoy, & Hoy, 1998). Teachers' self-efficacy influences teachers' behavior and student outcomes (see review in Tschannen-Moran et al., 1998). Teachers with a higher level of self-efficacy report a more intense commitment to teaching and fewer intentions to quit the profession (Chesnut & Burley, 2015; Klassen & Chiu, 2011). Thus, it is important that factors that may affect teachers' self-efficacy are explored (Klassen, Tze, Betts, & Gordon, 2011; Tschannen-Moran et al., 1998).

Literature Review and Hypothesis Development

Emotional intelligence (EI), which reflects individuals' ability to understand and regulate their emotions, and to empathize and respond appropriately to others' emotions (Wu, 2013), is one factor that may affect teachers' self-efficacy. Teachers assess their personal teaching competence when judging their level of self-efficacy (Tschannen-Moran et al., 1998). Teaching competence requirements vary with teaching tasks, but the ability to work with emotion is important for all teaching tasks (Corcoran & Tormey, 2013; Sutton & Wheatley, 2003). Teaching is an emotional enterprise (Hargreaves, 1998) in which teachers manage, monitor, and regulate their emotions to achieve pedagogical effectiveness and to create a positive learning environment (Gates, 2000). Thus, whatever the teaching task is, teachers are likely to incorporate their EI into their judgment of their level of self-efficacy. Empirical results have shown that EI is positively

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correlated with teachers' sense of self-efficacy (e.g., Moafian & Ghanizadeh, 2009; Sarkhosh & Rezaee, 2014). In addition, EI components may predict teachers' self-efficacy (Moafian & Ghanizadeh, 2009; Sarkhosh & Rezaee, 2014). For example, Chan (2004) found that the empathic sensitivity of secondary school teachers in Hong Kong predicted self-efficacy toward helping others, and that positive emotion regulation predicted general self-efficacy.

EI may also affect teachers' self-efficacy indirectly through another factor, such as *teaching performance*. According to the prosocial classroom model (Jennings & Greenberg, 2009), social and emotional competence can help teachers achieve an excellent performance in the classroom. Specifically, teachers with high social and emotional competence are more skillful in using emotional expression and verbal support to promote students' enthusiasm and enjoyment of learning and to guide and manage student behavior. In addition, these teachers are more understanding of the dynamics of classroom conflict situations, such that disruptive behavior can be substantially reduced (Jennings & Greenberg, 2009). Empirical findings have also shown that teachers with higher EI tend to exhibit better teaching performance (Drew, 2006; Yoke & Panatik, 2015).

According to self-efficacy theory, performance accomplishments constitute the most influential source of efficacy information (Bandura, 1978). Thus, if teachers perceive their teaching performance to be a success, they expect future successful performance and their efficacy beliefs are raised; if they perceive their teaching performance to be a failure, they expect failure in future performance and their efficacy beliefs are lowered (Bandura, 1997; Tschannen-Moran & Hoy, 2007). The prominent role of teaching performance in the formation of self-efficacy has found support in empirical results (e.g., Tschannen-Moran & McMaster, 2009). In addition, Holzberger, Philipp, and Kunter (2013) found that high-quality teaching performance results in an increase in teachers' self-efficacy beliefs in the subsequent school year.

In sum, previous findings show that EI influences teaching performance, which is associated with teachers' self-efficacy beliefs. Sarkhosh and Rezaee (2014) also proposed that EI increases teachers' performance accomplishment, the success of which contributes to improved self-efficacy. Thus, we investigated the links between EI, teaching performance, and indicators of teachers' self-efficacy. We proposed that as teachers with higher EI exhibit better teaching performance, this would shape their improved self-efficacy. Therefore, we formed the following hypothesis:
Hypothesis 1: Teachers' teaching performance will play a mediating role in the relationship between emotional intelligence and self-efficacy.

Following previous researchers (e.g., Chan, 2004; Moafian & Ghanizadeh, 2009; Sarkhosh & Rezaee, 2014), we proposed the following hypothesis:
Hypothesis 2: Higher emotional intelligence will be positively correlated with a higher level of teachers' self-efficacy.

We also investigated the extent to which the mediating effect of teaching performance was generalizable across gender and teaching experience. Penrose, Perry, and Ball (2007) demonstrated that the EI–self-efficacy relationship is strongly stable across gender and level of teaching experience. In addition, teaching performance has been found to be the source of self-efficacy throughout a teaching career (Tschannen-Moran & Hoy, 2007). Thus, we proposed the following hypothesis:
Hypothesis 3: The mediating role of teaching performance will be generalizable across gender and teaching experience.

Method

Participants and Procedure

Participants were 497 teachers recruited via convenience sampling from middle schools in China. They

signed informed consent forms before the study and had the right to leave the study at any time. The research was approved by the Academic Ethics Committee of Fujian Normal University.

Data obtained from 30 participants were removed because many items on their questionnaires were unanswered or were answered in a repetitive fashion. The remaining 467 surveys were validated (94% of total). Participant demographic information is shown in Table 1.

Table 1. *Participant Demographics*

Description	Group	*n*	%
Gender	Male	147	31.48
	Female	312	66.81
Age	30 years or younger	117	25.05
	31 to 40 years	240	51.39
	41 to 50 years	84	17.99
	51 years or older	26	5.57
Teaching experience	4 years or less	55	11.78
	5 to 14 years	216	46.25
	15 years or more	196	41.97
Subjects	Chinese	123	26.34
	Math	85	18.20
	English	103	22.06
	Physics, chemistry, or biology	58	12.42
	History, geography, or politics	48	10.28
	Others (e.g., physical education or music)	50	10.71

Note. Eight participants did not declare their gender.

Measures

Emotional intelligence (EI). We measured EI with the Middle School Teachers' Emotional Competence Scale (MSTECS; Wu, 2013). The 24-item MSTECS, which is a context-specific tool for measuring teachers' ability and disposition to use emotional skills when teaching, comprises six factors: self-emotion awareness (SEA; five items, e.g., "I am very aware of my emotions in class"), self-emotion expression (SEE; four items, e.g., "I immediately express my feelings to students once they influence my emotions"), self-emotion regulation (SER; five items, e.g., "I try to accomplish teaching tasks with a peaceful mind, even if I am in a bad mood"), students' emotion identification (SEI; four items, e.g., "I do not pay much attention to students' emotions in class"), empathy (three items, e.g., "I am happy for students if they enjoy happy moments"), and students' emotion management (STEM; three items, e.g., "I have the ability to influence students' emotions").

Items are rated on a 5-point Likert scale ranging from 1 (*do not agree at all*) to 5 (*very strongly agree*), with higher scores indicating higher EI. The internal consistency and split-half reliability of the MSTECS have been reported as .89 and .86, respectively (Wu, 2013). In this study, the internal consistency of the whole scale, SEA, SEE, SER, SEI, empathy, and STEM were .89, .78, .78, .70, .82, .69, and .66, respectively; the fit indices of confirmatory factor analysis (CFA) were $\chi^2/df = 2.404$, root mean square error of approximation (RMSEA) = .055, comparative fit index (CFI) = .913, Tucker–Lewis index (TLI) = .899.

Teaching performance. We measured teachers' teaching performance with the Middle School Teachers' Classroom Teaching Strategy Scale (MSTCTSC; Wu, 2013). The 23-item MSTCTSC is a tool for assessing the level at which teachers use teaching strategies in the classroom. We employed grades on the MSTCTSC as indicators of teaching performance because it has been proposed that a direct evaluation of what teachers do in the classroom is a valid way to assess teacher performance (Corcoran & Tormey, 2013; Darling-Hammond, 2010). Teaching strategies directly reflect teachers' choices and range of teaching methods

(Nicholls, 2002). The MSTCTSC comprises four factors: managing strategy (MAS; four items, e.g., "I seriously monitor students in class to prevent disruptive behavior"), motivational strategy (MOS; five items, e.g., "I value motivating students and inspiring enthusiasm for learning in class"), teaching methods (TM; 11 items, e.g., "My instructions are clear and well-organized, such that my students can easily understand me"), and instructional strategy (IS; three items, e.g., "I teach students memory strategies during classroom teaching").

Items are rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*), with higher scores indicating a better teaching performance. The MSTCTSC has shown good internal consistency (α = .92, split-half reliability = .92; Wu, 2013). In this study, the internal consistency of the whole scale, MAS, MOS, TM, and IS were .90, .72, .72, .79, and .88, respectively; the fit indices of CFA were χ^2/df = 3.039, RMSEA = .066, CFI = .912, TLI = .901.

Teachers' self-efficacy. We assessed teachers' self-efficacy with the 10-item Teachers' Sense of Teaching Efficacy Scale (TSTES, short version; Yu, Xin, & Shen, 1995). TSTES comprises two factors: personal teaching efficacy (PTE; 5 items, e.g., "I can change students with learning disabilities if I work hard") and general teaching efficacy (GTE; 5 items, e.g., "A good student can easily be taught; however, a bad student can never be taught"). Items are rated on a 5-point Likert scale ranging from 1 (*do not agree at all*) to 5 (*very strongly agree*), with higher scores indicating a higher level of self-efficacy. The internal consistency and split-half reliability of the TSTES have been reported as .77 and .84, respectively (Yu et al., 1995). In this study, the internal consistency of the whole scale, PTE, and GTE were .80, .84, and .67, respectively; the fit indices of CFA were χ^2/df = 4.834, RMSEA = .091, CFI = .920, TLI = .887.

Data Analysis

We analyzed data via structural equation modeling (SEM) using Mplus 7.0. We first constructed a direct effect model, following mediation analysis standards (MacKinnon, 2008; Wen & Ye, 2014), to examine the direct effect of EI on both teaching performance and teachers' self-efficacy. We then constructed a mediation model to test the mediating effect of teaching performance on the relationship between teachers' EI and self-efficacy. To test the generalizability of the hypothetical model, we further conducted a multigroup SEM analysis of the moderating effects of gender and teaching experience.

Results

Descriptive and Correlation Analysis

Descriptive statistics and correlations among the study variables are shown in Table 2. The results show that both total EI and the EI components were positively correlated with teaching performance and teachers' self-efficacy.

Table 2. *Descriptive Statistics and Correlations Among Study Variables*

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Emotional intelligence	4.90	0.02	–							
2. Self-emotion awareness	4.13	0.54	.82***	–						
3. Self-emotion expression	4.19	0.59	.72***	.56***	–					
4. Self-emotion regulation	4.15	0.55	.80***	.65***	.52***	–				
5. Students' emotion identification	3.68	0.82	.57***	.31***	.17***	.28***	–			
6. Empathy	4.29	0.57	.77***	.54***	.52***	.56***	.28***	–		
7. Students' emotion management	4.04	0.57	.76***	.59***	.49***	.65***	.18***	.59***	–	
8. Teaching performance	4.21	0.02	.70***	.63***	.49***	.68***	.26***	.51***	.61***	–
9. Self-efficacy	3.52	0.03	.42***	.23***	.19***	.34***	.41***	.29***	.32***	.35***

Note. *** $p < .001$.

Direct Effect Test

The normal distribution test results showed that all skewness and kurtosis values for the study variables were lower than 2, indicating that the data were normally distributed. Thus, we used maximum likelihood method to estimate the parameters in SEM.

To test the total direct effect of EI on teachers' self-efficacy and teaching performance, we constructed a direct effect model in which EI, self-efficacy, and teaching performance were considered as latent variables, and they were measured by their subfactors. We then examined the effect of age and subject taught on the latent variables. The fit indices of the direct effect model were $\chi^2/df = 4.522$, RMSEA = .090, CFI = .914, TLI = .888. Although the TLI value was lower than .90, the other fit indices indicated that the direct effect model fit the data well (Wang, Wang, & Jiang, 2011). Thus, the direct effect model was accepted.

In the direct effect model, only age and subject taught significantly impacted on EI ($\gamma = 0.14, -.14$, $SE = 0.05, 0.05$, $ps = .007, .006$, respectively), and explained 4% of the total variance. The direct effect of EI on teaching performance was .80, $SE = 0.07$, $p < .001$, 95% confidence interval (CI) = [0.66, 0.91], and on self-efficacy, .61, $SE = 0.13$, $p = .010$, 95% CI = [0.16, 0.65], indicating that higher EI was positively correlated with improved teaching performance and self-efficacy. This model explained 68% and 50% of the total variance of teaching performance and teachers' self-efficacy, respectively.

Mediating Effect Test

We constructed a mediating effect model (see Figure 1), based on the direct effect model of EI, to test the mediating role of teaching performance in the relationship between EI and teachers' self-efficacy. The fit indices of this model were $\chi^2/df = 4.522$, RMSEA = .090, CFI = .914, TLI = .888. Although the TLI value was lower than .90, the other fit indices indicated that the mediating model of teaching performance fit the data well (Wang et al., 2011). Thus, we accepted the model. The results showed that the direct effect of EI on teachers' self-efficacy was .23, $SE = 0.10$, $p = .021$, 95% CI = [0.04, 0.42], and the mediating effect of teaching performance on the relationship between EI and teachers' self-efficacy was .45, $SE = 0.11$, $p = .010$, 95% CI = [0.11, 0.55]. Of the total effect of EI on teachers' self-efficacy, the direct and mediating effects accounted for 33.8% and 66.2%, respectively.

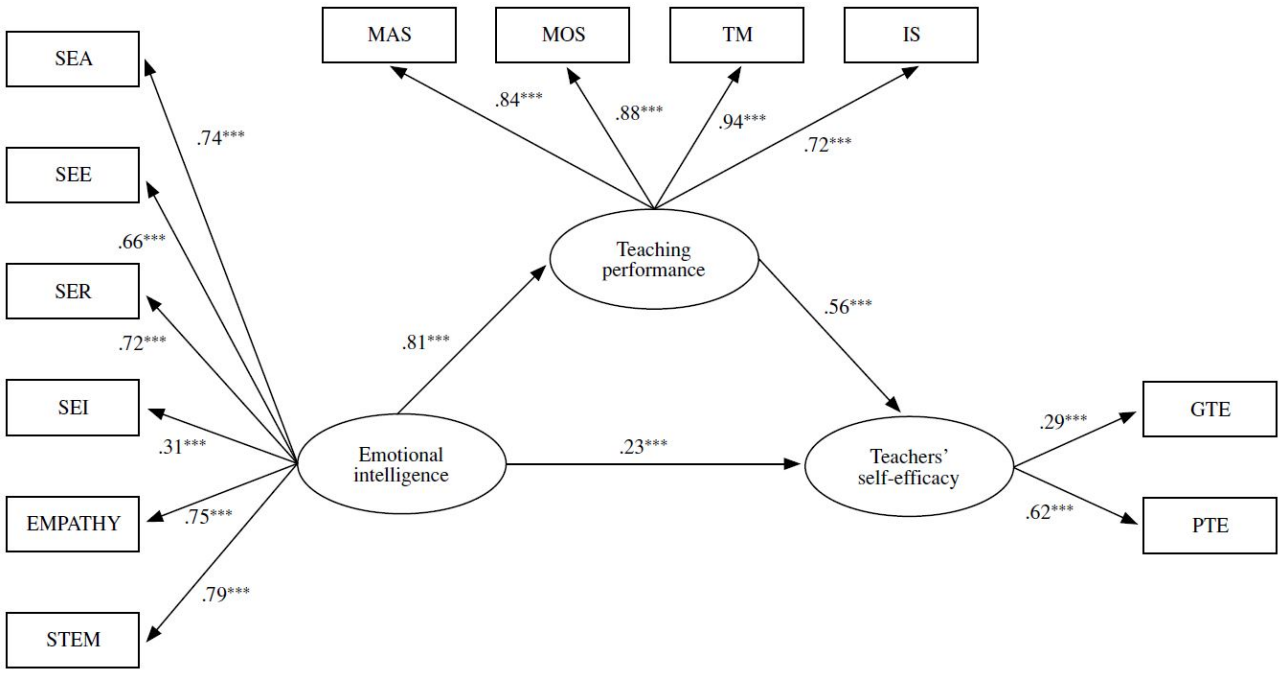

Figure 1. The mediating model of teaching performance. MAS = management strategy, MOS = motivational strategy, TM = teaching methods, IS = instructional strategy, SEA = self-emotion awareness, SEE = self-emotion expression, SER = self-emotion regulation, SEI = students' emotion identification, STEM = students' emotion management, GTE = general teaching efficacy, PTE = personal teaching efficacy.
*** $p < .001$.

Differences in Gender and Teaching Experience Test

As shown in Table 3, the mediation model of teaching performance fit the data well for both male and female teachers, indicating that it was suitable for further multigroup SEM analysis. Analysis results show that compared with the baseline model, the multigroup SEM did not show a significant χ^2 change, and changes in CFI were less than .01. These results indicate that the invariance of direct and indirect effects should be retained (Wang & Wang, 2012). Thus, we determined that both direct and indirect effects of EI on teachers' self-efficacy were not significantly different for male and female teachers, and that the mediation model of teaching performance was robust across gender.

Table 3. *Moderating Role of Gender and Teaching Experience in the Relationship Between Teachers' Emotional Intelligence, Teaching Performance, and Self-Efficacy*

Model	χ^2/df	RMSEA	CFI	TLI	$\Delta\chi^2/df$	ΔCFI
Gender						
The mediating model in male teachers	1.918	.082	.936	.917	-	-
The mediating model in female teachers	2.899	.081	.931	.910	-	-
Baseline: freely estimated regression coefficients	2.423	.082	.923	.911	-	-
Equality constraint on the direct path	2.413	.082	.923	.912	0.165 (1)	.001
Equality constraint on the indirect path	2.405	.081	.923	.913	1.342 (2)	.001
Equality constraint on all paths	2.392	.081	.923	.913	1.783 (3)	.001
Teaching experience						
The mediating model for teachers who had taught for 4 years or less	1.745	.130	.758	.684	-	-
The mediating model for teachers who had taught for 5 to 14 years	1.678	.058	.928	.907	-	-
The mediating model for teachers who had taught for 15 years or more	1.888	.064	.928	.906	-	-
Baseline: freely estimated regression coefficients (for two groups only)	1.651	.058	.925	.914	-	-
Equality constraint on the direct path	1.650	.058	.925	.914	1.462 (1)	.000
Equality constraint on the indirect path	1.652	.058	.924	.914	3.674 (2)	.000
Equality constraint on all paths	1.648	.058	.924	.914	4.757 (3)	.000

Note. RMSEA = root mean square error of approximation, CFI = comparative fit index, TLI = Tucker–Lewis index.

Due to the small number of participants who had taught for 4 years or less (n = 55), the mediation model of teaching performance did not fit the data well. However, for the subsamples of teachers who had taught for between 5 and 14 years, and 15 years or more, the mediation model of teaching performance did fit the data well. Therefore, the multigroup SEM analysis involved only teachers with teaching experience of 5 years or more. The results showed that compared with the baseline model, the multigroup SEM did not show a significant χ^2 change, and changes in CFI were less than .01; this indicates that the invariance of direct and indirect effects should be retained (Wang & Wang, 2012). Thus, both direct and indirect effects of EI on teachers' self-efficacy were not significantly different for teachers with teaching experience of between 5 and 14 years, and of more than 15 years.

Discussion

We investigated both the relationship between EI and teachers' self-efficacy, and the mediating role of teaching performance in this relationship. In line with our hypotheses, we found that higher EI was positively associated with a higher level of self-efficacy (supporting Hypothesis 2), and that the relationship was partially mediated by teaching performance (partially supporting Hypothesis 1). We also found that the direct and mediating effects of EI on teachers' self-efficacy were invariant across teachers' gender and teaching experience (supporting Hypothesis 3).

Teaching is an emotional enterprise (Hargreaves, 1998), and the ability to work with emotion, conceptualized in this study as EI, is a universal requirement for teaching tasks (Corcoran & Tormey, 2013; Sutton & Wheatley, 2003). Our finding that EI was associated with teachers' self-efficacy is consistent with previous findings (e.g., Chan, 2004; Moafian & Ghanizadeh, 2009). However, our result provides stronger evidence for this finding. Although previous researchers have measured teachers' general emotional skills (Moafian & Ghanizadeh, 2009; Sarkhosh & Rezaee, 2014), social and emotional competence is context dependent (Jennings & Greenberg, 2009). It is quite different for emotional skills measured in the abstract, as well as the ability and disposition that demand the use of emotional skills in teaching situations (Corcoran & Tormey, 2012). In this study, we measured teachers' emotional ability in a teaching context, with our results showing that teachers do assess their ability to work with emotion when they judge their level of self-efficacy in teaching.

We also found that teaching performance had a significant mediating effect on the relationship between EI and teachers' self-efficacy. The mediating effect was .45, largely accounting for the total effect of EI (66.2%). Moreover, the mediation model of teaching performance was invariant for male and female teachers, and for teachers with teaching experience between 5 and 14 years, and 15 years or more.

Previous researchers have found that teachers with higher EI tend to demonstrate better teaching performance (Drew, 2006; Yoke & Panatik, 2015). Jennings and Greenberg (2009) also suggested that teachers with greater social and emotional abilities exhibit better performance in classroom management. Performance accomplishment is the strongest source of self-efficacy (Bandura, 1997; Tschannen-Moran & Hoy, 2007). Thus, successful performance in the classroom can help teachers with higher EI achieve a higher level of self-efficacy. Our findings provide empirical evidence for Sarkhosh and Rezaee's (2014) proposal that EI increases the probability of success in the teaching profession and teaching achievement, contributing to a higher level of self-efficacy. Our findings also show that teachers with higher emotional skills or EI are better able to manage and motivate student learning, resulting in a successful experience for teachers and raising their self-efficacy.

There are several important practical implications from this study's findings. First, as the promotion of EI is an important way to enhance teachers' self-efficacy, we strongly suggest that, although EI teacher training is rare in Mainland China (Ju, Lan, Li, Feng, & You, 2015), EI should be incorporated into teacher training programs. Second, our results indicate that programs designed to improve experienced teachers' self-efficacy by increasing their EI cannot be implemented independent of instruction in teaching practice. This is in line with previous findings showing that experienced teachers' self-efficacy fluctuates when they are implementing changes, and the way to improve their self-efficacy is for them to gain mastery of techniques and then witness the resulting improved student learning (Guskey, 1986; Tschannen-Moran et al., 1998).

There are several limitations in this study. First, owing to the very few participants who had taught for 4 years or less, the mediating model of teaching performance did not fit their data well. Thus, caution should be exercised in regard to the findings concerning these teachers. Future researchers can recruit additional teachers and test this model again. Second, due to the cross-sectional design, this study was exploratory. Future researchers can employ a longitudinal approach and/or a randomized control design to examine the possible causal relationships among the three variables.

In sum, we found that EI was not only directly correlated with teachers' self-efficacy, but was also indirectly correlated with teachers' self-efficacy via teaching performance. The promotion of EI is thus an important way to enhance teachers' self-efficacy. EI training should not, however, be independent of a teaching context. An increase in EI will be largely beneficial only when emotional skills are successfully used to improve teachers' performance.

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