

## Research Reports

# Teacher Effectiveness in Relation to Emotional Intelligence Among Medical and Engineering Faculty Members

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## Abstract

Studies have revealed that emotional intelligence (EI) influences an individual's job performance in terms of organizational commitment and job satisfaction. But prior studies were limited mostly to the corporate sector. Therefore the present study was conducted to understand the correlation between EI and teaching performance in the case of faculty members at medical and engineering colleges, as courses related to these two fields are quite extensive and demanding which often leads to stress among students (Saipanish, 2003; Foster & Spencer, 2003; Schneider, 2007; Ray and Joseph, 2010). A total of 250 faculty members from three medical and four private engineering colleges of Uttar Pradesh, India, participated in the study. Emotional intelligence scale (EIS, 2007), Teacher Effectiveness Scale (TES, 2010) and Teacher Rating Scale (TRS, 2003) were administered to measure the emotional intelligence, self-reported teacher effectiveness and student rated teacher effectiveness of the faculty members respectively. All materials used in the study are constructed and standardized on Indian population. The study revealed a positive correlation between EI and teacher effectiveness, both self-reported and students rated. Among ten components of EI considered in the study; emotional stability, self-motivation, managing relations, self-awareness and integrity emerged as the best predictors of teacher effectiveness. Gender differences on the scores of EI and Teacher Effectiveness was insignificant. The EI and self-reported teacher effectiveness of engineering faculty members were relatively higher than those of medical faculty. However, according to students' rating there was no significant difference in teacher effectiveness among the two groups. Implications of this research from the perspective of training faculty members are discussed.

**Keywords:** emotional intelligence, teacher effectiveness, faculty members, private medical and engineering colleges

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The pursuit of higher education is expected to be stressful, especially in the field of medical and engineering education. Many studies have shown that stress levels of medical students are genuinely high (Miller, 1994; Saipanish, 2003; Ray & Joseph, 2010). Also, as compared to the general population, medical students experience more distress, anxiety and depression (Lloyd & Gartrell, 1984). A study conducted at Cornell's College of Engineering revealed that 62% of Engineering students felt extremely anxious about their grades (Schneider, 2007). Academic reasons like massive syllabus, the difficulty of the curriculum, long studying hours, and emotional factors like lack of peer support, competitive environment, rigid authoritative and non-encouraging faculty, lack of recreational activities, staying away from home, financial problems, uncertain future, cultural and minority issues, mismatch between capability and expectation, are some generators of stress among medical and engineering students (Wolf, 1994; Supe, 1998; Foster & Spencer, 2003; Schneider, 2007).

Efficient teaching and good learning are the two most important factors for success in academia. Conventionally, in higher education a teacher brings two things to the classroom that are of value to the learners. One is subject

expertise the other is knowledge of teaching methods i.e. a teacher's pedagogy, such as how to structure and explain the content being presented, use of materials and so on. But emotional intelligence is the unrecognized third component of what a teacher has to offer to learners (Mortiboys, 2005) because learning involves struggle, frustration, thrill or excitement (Claxton, 1999). A good teacher needs an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement and the motivation to learn.

According to neuroscience, the neural connection between the thinking and emotional centers of the brain can either enhance or inhibit a person's ability to learn (Davidson, 2000; Adolphs, 2003; Cacioppo & Berntson, 2009). Studies have also shown that emotions can activate and stimulate the brain for better recall (Cahill, Prins, Weber, & McGaugh, 1994; Dalgleish, 2004) and are crucial to sensory development because they facilitate the storage and recall of information (Rosenfield, 1988). Stress and threat cause the brain to downshift; this reduces the opportunity for neuron growth and causes learning to be inhibited (Ornstein & Sobel, 1987). Therefore teachers must understand the emotions of the students and act accordingly. This helps in creating a positive learning environment and motivating students for better performance because *how* a person learns is as important as what he/she learns.

Social neuroscience explains that, when two people interact, their emotional centers impact each other, for better or for worse (Wolpert & Frith, 2004; Cacioppo & Berntson, 2005; Goleman, 2006; Cacioppo, Berntson, & Decety, 2010). This means that teachers are able to help students get in better brain states for learning by acknowledging learners' expectations, hopes, worries and so on, which has a positive effect on how they feel. Smith (1997) asked students what qualities should the ideal teacher in higher education have, and found that interpersonal characteristics such as 'empathic', 'approachable' and 'relates to students as equals' were woven in with attributes relating to the lecturer's skills and knowledge. Carson (1996) gathered the responses of former students, who graduated over a period of 26 years, about teachers whom they perceived to be most effective. She found that the single quality the students most frequently associated with effective teachers – more often than brilliance and love of subject and even more often than enthusiasm in the classroom – was a special attitude toward students and relationship with them.

Spergel (2008) in her study on "The Impact of Teacher's Behaviours, Personality Characteristics and Skills on Students' Motivation to Learn" found that participants clearly voiced the necessity for a combination of positive behaviours, personality characteristics as well as skills on the teacher's part. A study conducted by Penrose, Perry, and Ball (2007) had revealed that EI was positively associated with teacher self-efficacy. Based upon this finding, Penrose et al. contend that enhancing teacher's EI may increase efficacy and subsequently lead to improved student achievement. Hall and West (2011) in their study demonstrated the important connection between understanding emotions, communication knowledge, dispositions, and performances.

Emotions are personal and subjective experiences caused by the complex interplay between physiological, cognitive and situational variables (Mandal, 2004). Buck (1985, cited by Singh, 1998) has defined emotions as the process by which motivational potential is realized or 'read out' when activated by challenging stimuli. In other words, emotions are mechanisms of carrying information about motivational systems as they have immense power to alter perception, memory and thought processes of an individual to achieve specific goals (Goleman, 1996). Different emotions produce different types of response and have different outcomes, for example, anger generates a pulse of energy strong enough for vigorous action, love generates a general state of calm and contentment

facilitating cooperation, happiness inhibits negative feelings and fosters an increase in available energy whereas sadness brings a drop in energy and enthusiasm (Levenson, Ekman, & Friesen, 1990). This shows that emotions can either be helpful or detrimental therefore they need to be recognized and regulated. According to Cooper and Swaf (1997), the ability of an individual to sense, understand and effectively apply the power and acumen of emotions as a source of human energy, information, connection and influence is called emotional intelligence (EI).

Salovey and Mayer (1989) originally used the term "emotional intelligence" in their published work and defined it as: A form of intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions. According to Bar-On (1997), EI is an array of emotional and social abilities. It includes five components: intrapersonal, interpersonal, adaptability, stress management, and general mood. Goleman's (1998) model outlines four main constructs of EI: self-awareness, self-management, social awareness and relationship management. Within different constructs of EI, there are a set of emotional competencies like emotional self-awareness, accurate self-assessment, self-confidence, trustworthiness, conscientiousness, adaptability, achievement drive, initiative, empathy, service orientation, organizational awareness, developing others, influence, communication, conflict management, leadership, change catalyst, building bonds, teamwork and collaboration.

In the current study, EI has been defined as the ability of a person to recognize and understand one's own emotions and those of others and regulate or manage those emotions so as to motivate self and others for achieving specific goals. Based on Goleman's model of EI and its competencies, the present research has incorporated ten components of EI: self-awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation, commitment and altruistic behaviour.

The definition of teacher effectiveness is subjective, meaning that it can be different for different people. The literature on teaching effectiveness or teacher effectiveness uses a variety of concepts (Ornstein, 1991). It has been explained by some researchers as teacher characteristics (Anderson, 1991; Strong, Tucker, & Ward, 2003) whereas, other researchers are more concerned with the teaching processes or the teaching outcomes (Flander & Simon, 1969). In the present study, teacher effectiveness has been defined as having good academic and professional knowledge with a clear concept of the subject matter, good preparation of the lesson with clear objectives, organized and systematic presentation of the concepts with proper learning materials, ability to communicate his/her knowledge to the students successfully, classroom management, positive attitude towards students and colleagues, result feedback accountability and ability to understand and motivate students.

A teacher needs awareness of his/her feelings, values and attitudes as a teacher, awareness of his/her behaviour and how others see them (Palmer, 1998). Consistent and constructive feedback from students, colleagues and school authorities facilitates a teacher in better self-evaluation of his/her abilities. Those with good EI have no hesitation in taking feedback from others and then working upon it to continuously evolve their performances. Teachers with high EI competencies are optimistic, adaptable, collaborative, confident, authoritative, open, approachable and enthusiastic (Mortiboys, 2005). They have better communication skills, better abilities for conflict resolution (Ming, 2003) and problem solving, better impulse and self-control and higher self-esteem. With higher level of motivation they are more assertive and more responsible and cope better with stress (Salami, 2010).

Interestingly, despite many studies showing the usefulness of EI in a teaching learning environment, very few researchers have explored the role of EI in teacher effectiveness for medical and engineering education, especially

when the courses related to these two fields are quite stressful (Wolf, 1994; Supe, 1998; Foster, & Spencer, 2003; Schneider, 2007). Therefore, the objective of the present study was to see if the EI of the faculty members has any relationship with teacher effectiveness from both a teacher's and student's perspective. Based on prior studies on EI and its correlation with work efficiency, it was hypothesized that the EI of the faculty members will have a positive correlation with teacher effectiveness.

Goleman (2001) posits that individuals are born with a general EI that determines their potential for learning emotional competencies. These competencies are not innate talents, but rather learned capabilities that must be worked on and developed to achieve outstanding performance. Emotional Intelligence by itself is probably not a strong predictor of job performance; instead, it provides a foundation for emotional competencies which are strong predictors of job performance as different jobs require different competencies. Haskett (2003) found a significant link between specific EI competencies, and behaviors of effective teaching in higher education. Therefore, the purpose of the current study was also to explore the relationship between various components of EI and teacher effectiveness along with their significance as predictors of teacher effectiveness.

Some professions may require a great deal of emotional intelligence while others may not (Spencer & Spencer, 1993; Yate, 1997). There are professions that require interacting with people, working in teams or having informal relationships. For example, leaders may need a higher degree of EI because of the very nature of their job, which requires them to interact with a large number of people, and empathize and understand their needs and desires. Sales require an ability to judge clients' moods and the emotional skill to decide when to promote the product and when not to be. Such professions may be satisfying only when one has the requisite level of emotional intelligence. In contrast, jobs that can be executed individually, in structured or fixed ways, may not require a great deal of emotional intelligence. For instance, success in painting or professional tennis may require more self-discipline and motivation, and less EI (Singh, 2006). Keeping this in view, the current study explored if there was any difference in the EI level and teaching/teacher effectiveness of medical and engineering faculty members.

While a large body of research focuses on the gender of students and their academic performance, less research explores the impacts of a teacher's gender on their teaching performance. Studies have revealed that early experience, biological factors, educational policy, and cultural context interact in complex ways contributing to gender differences in science and mathematics achievement and ability (Halpern et al., 2007). In line with gender stereotypes, males are expected to achieve in math, science, and technology, whereas females are reared to be interested in the arts and humanities (Ceci & Williams, 2010). The expected success of females in a given scientific task is generally lower than that of their male counterparts, even if they are equally competent. This societal belief however has not been supported much in the research community with regard to the published literature. With changing social perception, differences in performance between males and females have shrunk to nearly insignificant levels on most standardized tests and most researchers don't support the notion of innate superiority of males in math and science (Johnston, 2005). Despite these research findings, the gender stereotypes about the superiority of males in math and science-related professions still exist, therefore the present study also investigated gender differences in EI and in the teaching effectiveness of faculty members.

## Methods

The present research is exploratory and empirical in nature. The study utilized a correlation research design using standardized tools. The investigation examined the association of predictor variable emotional intelligence with

the criterion variable teacher effectiveness in the case of faculty members. The population of reference for this research consisted of all faculty members working in private medical and engineering colleges in Uttar Pradesh (UP), India. With cities like Noida, Gaziabad, Meerut, Kanpur, and Lucknow having many private professional colleges, UP becomes a major representative of professional education in North India. Population-wise also it is the largest state in India.

### Participants

The final sample consisted of 250 faculty members; 113 (44 females and 69 males) from medical college and 137 (59 females and 78 males) from engineering college. Thus a total of 103 female and 147 male faculty members participated in the study. The important representative cities of UP, each having a population above 10 lakh and having at least one private medical college, and five private engineering colleges were selected. Well established colleges within these cities were then selected on the basis of their infrastructure and courses offered. Convenience and approachability factors were also taken into consideration. The cities selected were Gaziabad, Lucknow, Kanpur, Meerut and Bareilly. Twelve colleges (6 each of medical and engineering) were shortlisted and contacted for seeking permission to conduct the study but only seven colleges (3 medical and 4 engineering) granted permission. Faculty members teaching different subjects in the various departments of the colleges were selected randomly.

### Materials

All the tools used in the study are constructed and standardized on the Indian Population and available from the Psychological Corporation of India.

*Emotional Intelligence Scale* (EIS) by Upinder Dhar, Sanjyot Pethe, and Anukool Hyde (Hyde, Pethe, & Dhar, 2007) was used to measure the EI of faculty members. The scale is in line with Goleman's view of EI. This measure was preferred over other measures as it is constructed and standardized on Indian population and available from the Psychological Corporation of India. The split half reliability coefficient of the scale is 0.88 and its content validity is 0.93. The validation has been done on Indian executives but it can be used for other professions as well. The scale has a total 34 items with response options of strongly agree, agree, neutral, disagree and strongly disagree. It measures ten components of emotional intelligence: self-awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation, commitment and altruistic behaviour. An example of an item is: "I can listen to someone without an urge to say something".

*Teacher Effectiveness Scale* (TES), developed by Dr. Shalu Puri and Prof. S. C. Gakhar (Puri, Ghakar, 2010), was administered to measure the teaching effectiveness of faculty members. The test-retest reliability coefficient of the scale is 0.76 and its content validity is .91. The scale consists of a total of 68 items with the response categories – strongly agree, agree, undecided, disagree and strongly disagree. The areas of teaching measured by the test items are – academic and professional knowledge, preparation and presentation of lesson, class management, attitude towards students, parents, colleagues and head of the institution, use of motivation, reward and punishment, result, feedback accountability and personal qualities. An example of an item is: "I seek the cooperation of students to pursue my topic".

*Teacher Rating Scale* (TRS), developed by Dr. R. C. Deva (2003), was used for the rating of teacher effectiveness of faculty members by the students. The scale consists of 17 dimensions, grouped under 3 categories: personal qualities, professional competence and classroom performance of the teachers. The inter-rater reliability coefficient

of the scale is .91 and its content validity is .85. An example of an item is: "The teacher encourages students to discuss and present their views".

Two measures (TES and TRS) of teacher effectiveness were used as TES is a self-report measure with items constructed from the teachers' point of view for self-evaluation whereas items in TRS are constructed from a student's point of view asking their opinion about the personal qualities, professional competence and classroom performance of their teachers. Also, it would have been very time consuming for students to rate five teachers each on 68 items; therefore TRS was used as it accommodates the various items of TES under 17 dimensions of teacher effectiveness making it convenient for respondents.

## Procedure

Approval for the investigation was acquired from the principal, director and the chairman of the respective colleges. Faculty members teaching 2<sup>nd</sup> to 4<sup>th</sup> semester students in various departments of the colleges were selected randomly. They were contacted personally by the researcher and after a general introduction both tools were handed over to them. The confidentiality of the information obtained from the respondents was guaranteed. Completed questionnaires were collected after a few days. Data analysis was done using statistical software (SPSS, 16.0 version). Pearson *r* correlation, regression analysis and t-test were used to determine the relationship, predictive value and difference in the variables under study.

## Results

As indicated in Table 1 the mean age of the total sample (N = 250) was 34.39 years (S.D = 10.67). The gender ratio was male (58.8%) versus female (41.2%). The minimum age of the total sample was 23 years and maximum age was 68 years. There was a significant difference in the mean age of medical faculty (40.50 years) as compared to the mean age of engineering faculty (29.36 years), showing that engineering faculty members are comparatively much younger than medical faculty members. The mean age of female faculty members (31.47 years) was also found to be lower than the mean age of male faculty members (36.44 years) indicating that males might prefer to explore other professions before joining the teaching profession.

Table 1

*Age of Faculty Members*

	N	Min	Max	Mean	SD
Total	250	23	68	34.39	10.670
Male	147	23	68	36.44	12.289
Female	103	23	61	31.47	6.877
Engr-Fac.	137	23	64	29.36	6.959
Med-Fac.	113	24	68	40.50	11.223

Table 2 provides the descriptive statistics regarding the scores of faculty members on EI, Teacher Effectiveness Scale (TES) and Teacher Rating Scale (TRS) for the total sample. The respective means of EI, TES and TRS scores were 138.69 (SD = 9.21), 289.54 (SD = 21.32) and 86.74 (SD = 14.40). Statistical analyses revealed the normal distribution of the data. TES scores were obtained through self-reported teacher effectiveness of the faculty members, whereas TRS scores were obtained through student-rated teacher effectiveness.

Table 2

*EI, Self-Reported Teacher Effectiveness (TES) and Student-Rated Teacher Effectiveness (TRS)*

	N	Min	Max	Mean	Std. Error of Mean	SD
EI	250	115	164	138.69	.583	9.211
TES	250	225	337	289.54	1.348	21.321
TRS	250	54	118	86.74	.912	14.400

Inter-correlation of EI and its components with TES and TRS is presented in Table 3. It was predicted that there would be a positive relationship between EI, TES and TRS. This hypothesis was supported in the study as a strong relationship ( $r = .649$ ,  $p < .01$ ) was found between EI and TES. The correlation between EI and TRS was also positive and significant ( $r = .561$ ,  $p < .01$ ) which indicates that, the better the EI level of faculty members, the better their teaching efficiency. The correlation between TES and TRS ( $r = .449$ ,  $p < .01$ ) indicates that, although there is a positive relationship between teachers' self-perception and students' perception about their teacher effectiveness, this relation it is not very strong. This was because some of the faculty members had reported their teaching effectiveness lower than how students had rated their effectiveness, while others had reported it higher than students' ratings.

Table 3

*Inter-Item Correlation for Variables Under Study*

	1	2	3	4	5	6	7	8	9	10	11	12
1. SA	-											
2. Emp	.353	-										
3. SM	.510	.282	-									
4. ES	.462	.473	.446	-								
5. MR	.463	.476	.345	.545	-							
6. Int.	.368	.222	.360	.402	.372	-						
7. SD	.257	.193	.299	.318	.232	.304	-					
8. VO	.314	.281	.314	.276	.168	.195	.054	-				
9. Com	.385	.246	.350	.257	.362	.320	.142*	.349	-			
10. Alt	.213	.269	.340	.319	.278	.275	.201	.156*	.285	-		
11. EI	.715	.646	.715	.756	.710	.606	.473	.459	.548	.496	-	
12. TES	.456	.388	.457	.550	.485	.418	.282	.296	.363	.293	.649	-
13. TRS	.422	.311	.453	.501	.459	.323	.266	.193	.271	.256	.561	.449

*Note.* N = 250. SA = Self-awareness; Emp = Empathy; SM = Self-motivation; ES = Emotional stability; MR = Managing relations; Int. = Integrity; SD = Self-development; VO = Value orientation; Com = Commitment; Alt = Altruism; TES = Self-reported teacher effectiveness; TRS = Students rated teacher effectiveness.

\* $p < .05$ . All correlations except those marked with asterisks are significant at .01 level, value less than .138 is insignificant.

One of the objectives of the study was to explore the relationship between EI components and TES and TRS. The purpose was also to assess, which component had the highest and the lowest correlation with the two types of teacher effectiveness. Data mentioned in Table 3 indicate positive relationships of all components of EI with TES and TRS both; emotional stability had the highest correlation ( $r = .550$ ) with TES followed by managing relations ( $r = .485$ ), self-motivation ( $r = .457$ ), self-awareness ( $r = .456$ ), integrity ( $r = .418$ ), empathy ( $r = .388$ ), commitment ( $r = .363$ ), value orientation ( $r = .296$ ), altruism ( $r = .293$ ), and self-development ( $r = .282$ ). With TRS also, emotional stability had the highest correlation ( $r = .501$ ), followed by managing relations ( $r = .459$ ),

self-motivation ( $r = .453$ ), self-awareness ( $r = .422$ ), integrity ( $r = .323$ ), empathy ( $r = .311$ ), commitment ( $r = .271$ ), self-development ( $r = .266$ ), altruism ( $r = .256$ ), value orientation ( $r = .193$ ).

Regression of EI on TES and TRS, as indicated in Table 4, reveals that EI was a significant predictor for predicting both self-reported as well as student rated teacher effectiveness, accounting for 42% of the variance in TES and 33% in TRS for the total sample. There was not much difference in the variance of male (43%) and female (41%) TES scores, but the variance of male TRS (37%) was higher than that of females (25%). The variance of TES scores was found to be higher for engineering faculty (44%) as compared to medical faculty (35%). But the variance of TRS scores was higher for medical faculty (34%) than engineering faculty members (30%).

Table 4

Regression of EI on TES and TRS

	N	TES			TRS		
		R	R <sup>2</sup>	F	R	R <sup>2</sup>	F
Male-fac.	147	.656	.430	109.43	.607	.368	84.60
Female-fac.	103	.641	.411	70.60	.496	.246	33.01
Med-fac.	113	.595	.354	60.70	.582	.338	56.75
Engr-fac.	137	.661	.436	104.48	.546	.298	57.35
Total EI	250	.649	.421	180.62	.561	.330	122.73

$p < .001$ .

Stepwise regression analyses were calculated using TES and TRS as dependent variables and the ten components of EI as predictors. The prediction models mentioned in Table 5 provide insight into the specific EI components that contribute to TES and TRS. Emotional stability emerged as the best predictor both for TES ( $\beta = .287$ ,  $p < .001$ ) and TRS ( $\beta = .262$ ,  $p < .001$ ), followed by self-motivation ( $\beta = .204$ ,  $p < .001$  for TES and  $\beta = .258$ ,  $p < .001$  for TRS), and managing relations ( $\beta = .201$ ,  $p < .001$  for TES and  $\beta = .227$ ,  $p < .001$  for TRS).

Table 5

Regression Analysis: Best Fit Models of EI Components as Predictors ( $\beta$ ) for TES and TRS

EI components	TES		TRS	
	Model 1	Model 2	Model 1	Model 2
Self-awareness	n.s.	.271***	n.s.	.282***
Empathy	n.s.	.219***	n.s.	.155**
Self-motivation	.204***	n.s.	.258***	n.s.
Emotional stability	.287***	n.s.	.262***	n.s.
Managing relations	.201***	n.s.	.227***	n.s.
Integrity	.155***	n.s.	n.s.	.149**
Self-development	n.s.	.144**	n.s.	.118*
Value orientation	n.s.	n.s.	n.s.	n.s.
Commitment	n.s.	.185***	n.s.	n.s.
Altruism	n.s.	n.s.	n.s.	n.s.
R	.643	.562	.593	.497
R <sup>2</sup>	.413	.316	.352	.247
F	43.294	28.405	44.729	20.176

Note. N = 250.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . n.s. = non-significant.



Integrity was a significant predictor for TES ( $\beta = .155, p < .001$ ) in model 1, which explains 41.3% variance in TES when grouped with emotional stability, self-motivation and managing relations. In model 2, for TES self-awareness ( $\beta = .271, p < .001$ ) emerged as the best predictor followed by empathy ( $\beta = .219, p < .001$ ), commitment ( $\beta = .185, p < .001$ ) and self-development ( $\beta = .144, p < .01$ ) explaining 31.6% variance in TES when all four components were combined. For TRS also self-awareness ( $\beta = .282, p < .001$ ) emerged as best predictor in model 2 followed by empathy ( $\beta = .155, p < .01$ ), integrity ( $\beta = .149, p < .01$ ) and self-development ( $\beta = .118, p < .05$ ), explaining 24.7% variance in TRS when all four components were grouped. Altruism and value orientation were not significant as predictors for both TES and TRS.

Differences in EI, TES and TRS between engineering and medical faculty members are provided in Table 6. The mean of EI scores of Engineering faculty was 140.47 (SD = 9.47) and that of Medical faculty was 136.52 (SD = 8.43). The value of  $t$  on EI scores of the two groups was 3.449, significant at .01 level. It indicates that the emotional intelligence of engineering faculty members was higher than that of medical faculty. The mean of self-reported teaching efficiency (TES) was 294.27 (SD = 20.35) and 283.81 (SD = 21.16) respectively for engineering and medical faculty members. The value of  $t$  on TES scores for the two groups was 3.972, significant at a .01 level. Thus, the self-reported teaching efficiency of engineering faculty members was found to be higher than that of medical faculty. The mean of student rated teacher effectiveness (TRS) was 88.029 (SD = 13.84) and 85.725 (SD = 15.03) respectively for engineering and medical faculty members. The value of  $t$  on TRS scores (1.261) indicates that, although the TRS mean of engineering faculty members was found to be higher than that of medical faculty, it was not significant at a .05 level.

Table 6

*Difference in EI, TES and TRS of Engineering and Medical Faculty Members*

	Group	N	Mean	SD	t-test
EI	Engr_fac	137	140.47	9.47	3.449**
	Med_fac	113	136.52	8.43	
TES	Engr_fac	137	294.27	20.35	3.972**
	Med_fac	113	283.81	21.16	
TRS	Engr_fac	137	88.03	13.84	1.261 (n.s.)
	Med_fac	113	85.73	15.03	

\*\* $p < .01$ . n.s. = non-significant.

Table 7 indicates group statistics for EI, TES and TRS in the case of male and female faculty members. The mean of male faculty members' EI was 139.06 (SD 9.19), and that of female faculty members was 138.16 (SD 9.26). The value of  $t$  for the EI scores of the two groups (0.445) indicates that there was no significant difference found in the EI of male and female faculty members. The mean of respective scores of TES and TRS for male members was 289.56 (SD 21.48) and 88.22 (SD 14.11) whereas for female members it was 289.52 (SD = 21.20) and 85.22 (SD = 14.68). The value of  $t$  on TES score (0.990) and on TRS (.106) indicates that there were no significant differences in the teacher effectiveness of male and female faculty members; although the mean of teacher effectiveness for male faculty members rated by the students was higher than that of female faculty members, the differences was not significant at a .05 level.

Table 7

*Difference in EI, TES and TRS of Male and Female Faculty Members*

	Gender	N	Mean	SD	t-test
EI	M	147	139.06	9.19	.445 (n.s.)
	F	103	138.16	9.26	
TES	M	147	289.56	21.48	.990 (n.s.)
	F	103	289.52	21.20	
TRS	M	147	88.22	14.11	.106 (n.s.)
	F	103	85.22	14.68	

n.s. = non-significant.

## Discussion

While the intellectual standard and subject expertise of teachers are important there are undoubtedly other qualities as well, that predict future teacher effectiveness, which requires a mix of intellectual and personal attributes (Zumwalt & Craig, 2005). The results of the study indicate that the EI of faculty members has a significant positive relationship with their teaching efficiency both self-reported as well as student rated. Thus, the higher the EI, the better teacher effectiveness is. This is because emotionally intelligent teachers seek to have confidence not just in their content and materials but also in their flexibility and readiness to respond; they put energy into getting materials and methods planned but also into preparing to meet learners' expectations (Jensen, 1998). This is supported in the current study as self-motivation was found to be a significant predictor of teacher effectiveness. A significant positive relationship was found between the EI of faculty members and their teacher effectiveness as rated by students as well. This shows that learners' perceptions may be influenced when the teacher uses EI. If learners perceive the teacher as showing care and respect towards them, they are likely to interpret the strictness of the teacher in a positive manner and try to follow the instruction given by him or her (Mortiboys, 2005).

In summary, this study explored the relationship between components of EI and teacher effectiveness and also sought to identify which EI component would significantly predict teacher effectiveness. Results supported the existence of a positive relationship between all the components of EI and both self-reported and student rated teacher effectiveness. Among the ten components, emotional stability had the highest correlation with both types of teacher effectiveness and emerged as the best predictor. The emotional stability of a teacher helps in avoiding emotional exhaustion and conflict with others which subsequently helps in better coping with stress and burnout thus improving performance (Slaski & Cartwright, 2002; Nikolaou & Tsaousis, 2002; Salami, 2010). Finding ways to deal with anger, fear, anxiety and sadness channelize, emotions to a positive end and is an essential sign of emotional competency.

Emotional management may underlie the ability of a teacher to be inspirationally motivating and intellectually stimulating. It is because teachers who are able to manage positive and negative emotions within themselves are able to understand the effects of positive and negative emotions on their work performance and relations with others. Therefore, emotional stability had a considerably high correlation with managing relations which emerged as the second best significant predictor of teacher effectiveness, both self-reported and student rated. Managing relations develops a better understanding between teachers and students creating a positive environment in the class. It helps to intervene and solve problems before they become serious.

Self-motivation also had a significant correlation with teacher effectiveness (both self-reported and student rated) and emerged as the second best predictor. Self-motivated teachers can articulate a vision for the future and talk optimistically. They are not only able to motivate themselves but are also able to encourage and stimulate in others new ways of doing things. Integrity was also one of the best four predictors of self-reported teacher effectiveness. A teacher who is honest, upright and true to him/herself and others is sincere and committed to his/her work. This is supported by a significant correlation between Integrity and commitment. According to students' ratings, integrity was also a significant predictor when grouped with self-awareness, empathy and self-development.

Self-awareness revealed a significant correlation with both types of teacher effectiveness and emerged as the best predictor when grouped with empathy, commitment and self-development. Self-awareness helps faculty members identify the strengths and weaknesses of their present teaching performance and gives direction for future improvement. It is revealed in the present study by a significant correlation between self-awareness and self-motivation. Knowing one's emotional strength and weaknesses is of great help because the self has to constantly respond to the outer world. If one cannot interpret one's own emotions, he or she may not be able to do the same for others (Carver, 2003). This reduces effectiveness in handling interpersonal relationships. A teacher who has better awareness of his own emotions also has a better awareness of the emotions of his/her students and colleagues. This is supported by a significant correlation between self-awareness, emotional stability and managing relations

Interestingly, according to students' ratings, empathy was not a very strong predictor of teacher effectiveness. This was probably because a teacher may be high on empathy but he/she may not have acquired the skills, based on empathy, that lead to students' satisfaction in teaching, the ability to coach or monitor their progress, or to resolve conflict. Teachers' self-reported empathy had a better predictive value for teacher effectiveness as it helps in understanding the emotions of others which leads to better interpersonal relations and also helps to deal effectively with conflicts (Welch, 2003). This is supported in the study as empathy had a significantly high correlation with emotional stability and managing relations. Empathy also revealed significant correlations with altruism and commitment. This may be because empathy helps teachers in understanding the needs and expectations of the students, thus motivating them to be committed to improve their teaching effectiveness. Self-development emerged as a significant predictor in the study, although its correlation with teacher effectiveness was not very strong. Self-development motivates a teacher for personal growth. He/she tries to develop himself/herself even if his/her job does not demand it. Value orientation and altruism did not prove to be significant predictors and their correlation with teacher effectiveness was also not very strong. But their correlation with self-motivation and overall EI was significant which shows that probably value orientation and altruism do not have a direct impact on teacher effectiveness but they are relevant in developing the overall EI of a teacher and motivate him/her for better performance.

A study conducted by Singh (2003, cited by Singh, 2006) on Indian professionals about the levels of EI required for success in eighteen different professions revealed that on the basis of the EI required, these professions can be grouped into three clusters. The first cluster constitutes four professions exhibiting an extremely high EI level—artist, insurance, advertisement and social work. The second cluster consists of six professions: teaching, legal, tourism, politics, business/ entrepreneurship and police. To be 'successful' in any of these professions, one needs a high EI level. The third cluster constitutes eight professions exhibiting average EI: judiciary, administration, information technology, medicine, banking, engineering, accountancy and nursing. In these professions, individuals with moderate EI can also perform effectively. When average EI score of the professional from all eighteen

professions under study were ranked from high to low, the EI score of doctors was slightly higher than that of engineers.

In the current study, the EI of engineering faculty was found to be higher than that of medical faculty, probably because most of the engineering faculty members had worked as teachers in engineering colleges and not as engineers thus, by profession, they were more teachers than engineers. Whereas, for medical faculty members, it is mandatory to have a substantial experience of clinical practice before becoming eligible for teaching classes. Thus, by profession, medical faculty members are doctors as well as teachers and, according to Singh's study, doctors are in the third cluster whereas teachers are in the second cluster. This could be the reason why self-reported EI and teacher effectiveness of medical faculty members were lower than those of engineering faculty. Interestingly, according to students' ratings, there was no difference in the teacher effectiveness of medical and engineering faculty probably because students perceive faculty members more as teachers than as doctors or engineers.

Research findings on gender differences in EI are not very consistent and there are discrepancies in this regard. Some studies have found significant gender difference in EI both in professional and personal settings (Mayer & Geher, 1996; Mayer, Caruso, & Salovey, 1999; Mandell & Pherwani, 2003). Daniel Goleman (1998) asserted that no gender differences in EI exist, admitting that while men and women may have different profiles of strengths and weaknesses in different areas of emotional intelligence, their overall levels of EI are equivalent. The discrepancy may be due to choice of measurement. Brackett and Mayer (2003) found that females scored higher than males on EI when evaluated with a performance measure (the Mayer-Salovey-Caruso Emotional Intelligence Test). However, when using self-report measures, such as the Bar-On Emotion Quotient Inventory (EQ-i) and the Self-Report Emotional Intelligence Test (SREIT), they found no evidence for gender differences. Perhaps gender differences exist in emotional intelligence only when one defines EI in a purely cognitive manner rather than through a mixed perspective (Stys & Brown, 2004). In the present study, also, no significant gender difference could be seen as the instrument used in the study was of a self-report type based on a mixed ability model.

According to O'Hara, we are still very much in a state of mixed findings when it comes to gender and brain processing (Johnston, Stanford University report, 2005). In their study, Yazıcı and Ertekin (2010) found that prospective male teachers have a more instrumentalist approach in learning mathematics than females do according to their mathematical beliefs and, on the other hand, females have more mathematics teaching anxiety than males, especially in terms of subject knowledge and self-confidence. Gender stereotypes that males have a better understanding of science and mathematics, based subjects whereas female are better at teaching languages (Beilock, Gunderson, Ramirez, & Levine, 2010), is generally prevalent in many societies. But most experts agree that if gender differences do exist, they are small and likely to affect specific areas of math skill at the highest end of the spectrum; there is no indication that women cannot succeed in mathematically demanding fields. Still, women continue to be underrepresented in math, science and engineering-related careers (Ceci, Williams, & Barnett, 2009; Azar, 2010).

After reviewing decades of research on gender differences, Ceci and Williams (2010) concluded that while there's probably some genetic basis for small differences between the sexes in math and spatial ability, culture plays by far the bigger role in men and boys' higher interest and achievement. However, with the changes in socio-cultural norms, this gender stereotype is gradually reducing and girls are taking math and science courses in a significantly larger number (Bolzendahl & Myers, 2004; Ceci & Williams, 2010; Else-Quest, Hyde, & Linn, 2010). When girls

see opportunities for themselves in science, technology, engineering and math, they're more likely to take higher-level math in high school and more likely to pursue such careers (Else-Quest, Hyde, & Linn, 2010). The results of the present study are convergent with this view, as there was no significant difference found between the teacher effectiveness of male and female faculty members. However, in the regression analysis of EI and teacher effectiveness, the variance of students' ratings of teacher effectiveness for male faculty members was much higher than that of female faculty members. But, in self-reported teacher effectiveness, the variance of male faculty members was only slightly higher than that of females.

Studies have revealed that EI intervention programs have been immensely beneficial in the corporate sector. Researchers are trying to emphasize its importance in the field of education as well. Nelson, Low, & Nelson (2006) found that a research based educational model of EI provides a positive and practical approach to help teachers and students stay healthy, act responsibly and deal effectively with change. EI training increases focus, learning, collaboration, improves classroom relationships, and decreases negative 'put downs' (Jensen, 2001). Penrose, Perry, & Ball (2007) contend that enhancing teacher's EI may increase efficacy and subsequently lead to improved student achievement. Based on their findings, the researchers of the present study also, strongly support and recommend a well-developed EI intervention program for faculty members to enhance teacher effectiveness and, subsequently, help students to manage stress and anxiety for a better academic performance.

Organizations like Consortium on Research on Emotional Intelligence in Organizations (CREIO) and The Work Psychology and Human Resources Forum (WPHRF), working for promoting EI competencies in the work place, recommend a training process that includes four basic phases. The first phase, which is crucial for effective social and emotional learning, involves preparation for change, and it occurs at both organisational and individual levels. In the second phase, the training focuses on the change process itself. This includes the processes that help people change the way in which they view the world, and deal with its social and emotional demands. The third phase, transfer and maintenance, focuses on what happens after formal training experience has been gained. The fourth and final phase involves evaluation of programmes effectiveness. However, due to constraints of time and budget, it is sometimes difficult to follow all these four phases extensively. Especially for medical faculty members, time is a major constraint. Hence, such programmes should be customized according to the needs of the organization and should preferably be of a shorter duration.

The success of any such programme depends on the willingness of participants to learn and bring change in their attitudes and behaviours because sustainable behavioral change is intentional and must be self-motivated (Boyatzis, 2001). Therefore, the first phase of the training must emphasize making faculty members understand the power of emotions, their motivational aspects in the teaching-learning process and the role of EI in their professional as well as personal life. It is important to mention here that during the data collection for the current study, it was noticed that many of faculty members were not aware about EI or emotional intelligence. Thus, awareness of EI is a first requirement. This can be done through presentations and talks delivered by expert EI trainers.

The second phase must incorporate techniques to improve the emotional stability of faculty members as this component of EI revealed the highest correlation with teacher effectiveness and also emerged as the best predictor. Importance of EI competencies like self-awareness, managing relations, self-motivation, integrity, commitment and self-development in enhancing teacher effectiveness and creating a positive learning environment can be highlighted through videos, group activities, case studies and group discussion. In the third phase of training, self-evaluation forms can be provided to faculty members to assess the application of EI competencies in the

classroom and other work related situations. In the fourth phase, the effectiveness of the programme can be evaluated with the help of feedback forms filled by participants.

### Limitations and Future Directions

This study also has certain limitations. Firstly, the measures used in the study for EI and teaching effectiveness were based on self-report, therefore the social desirability factor can come into play to some extent; however, to minimize this effect, student rating was also taken. Similarly, the design of the instrument, with only 34 questions for assessing ten components of EI, may limit the thorough assessment of EI. Secondly, as the selection process for students and faculty members of private medical and engineering colleges differs from that of government colleges, the sample was restricted only to private institutes. There were also geographical constraints in the study as it was limited to institutes situated within Uttar Pradesh, India. Therefore, it is suggested that future researchers could conduct this type of study with faculty members and students at government colleges as well, and also in other states, countries and cultures, to provide more evidence to generalize findings from this study. Thirdly, the present report is based on correlations, demonstrating a positive relationship between the EI and teacher effectiveness of faculty members; therefore no causal relationship should be drawn from the study. Experimental research is recommended in the future to establish cause-effect relationships between EI and teacher effectiveness in the case of faculty members.

### Conclusion

Researchers have been making efforts to understand how EI and IQ complement one another, for instance, how a person's ability to handle stress affects his/her ability to concentrate and put his/her intelligence to use. The more complex a job, the more important is EI because deficiency in these abilities can hinder the use of whatever technical expertise or intellectual abilities a person may have. The results of the present study also indicate the importance of EI and its usefulness in teaching performance as the EI of medical and engineering faculty members was found to have a significant correlation with teaching/teacher effectiveness. Hence, there is a need to promote the EI of faculty members along with their subject knowledge and pedagogical skills for better efficiency in the teaching-learning process in higher education, and especially in professional courses like medical and engineering, so as to reduce anxiety and stress among students. The EI and self-reported teacher effectiveness of engineering faculty members were comparatively higher than those of medical faculty members; but, according to student rating, there was no significant difference in teacher effectiveness between the two groups. This is probably because students, whether from medical or engineering, perceive faculty members more as teachers than as doctors or engineers. Gender differences in EI and teacher effectiveness were also not significant. Hence, it is concluded that, with changing social conceptions, gender stereotypes are also changing and females are starting to be seen as competent teachers in both medical and engineering colleges.

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