



Published in final edited form as:

*Ann Behav Sci Med Educ.* 2009 ; 14(2): 65–68.

## Emotional Intelligence in Internal Medicine Residents: Educational Implications for Clinical Performance and Burnout

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### Abstract

We measured emotional intelligence (EQ; the ability to perceive, understand, and manage emotions in the self and others) in a sample of 28 internal medicine residents at the beginning and end of an academic year. EQ scores increased significantly over the course of the year. Higher EQ scores at the end of the year were significantly related to higher ratings for overall clinical performance and medical interviewing. Higher EQ scores also correlated with lower levels of burnout. Results suggest that clinically significant changes in EQ can occur over the course of medical training. Further study should determine if and how educational interventions can affect EQ, EQ-related performance, and burnout.

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A growing body of literature suggests that attending to communication skills, the doctor-patient relationship, and provider personal development can have a beneficial affect on both patient and provider outcomes. Recognizing patients' emotional clues<sup>1</sup>, the skilled use of empathic communication<sup>2,3</sup>, and other patient-centered interviewing techniques have shown promise.<sup>4</sup> Although the extent to which clinicians can learn these skills and how best to teach them remains unclear,<sup>5,6</sup> a recent systematic review of 26 studies (including five randomized controlled trials) concludes that "emotion skills" are teachable and should be routinely included in medical education.<sup>7</sup> Moreover, some have argued that physician personal reflection and development<sup>8</sup> and a greater "mindfulness"<sup>9</sup> of the intimate "connexion"<sup>10</sup> between healer and patient are important, teachable skills that belong in the realm of medical education and clinical practice. The global construct of Emotional Intelligence (EQ) encompasses many of these factors and may account for observed variations in physicians' performance, well-being, and translation of knowledge and interviewing skills into effective clinical practice. As a broad and empirically defined concept, EQ provides a theoretical infrastructure to study the art of medicine and may assist medical educators in developing sound pedagogical approaches if used rigorously and responsibly.<sup>11</sup>

EQ is defined as the ability to perceive, understand, and manage emotions in oneself and others.<sup>12</sup> The construct was first developed by research psychologists in the early 1990's who have since continued to refine and empirically validate EQ models. Two predominant models of EQ have emerged: the "ability model," which is strictly a performance measure most analogous to IQ, and the "mixed model," which measures both performance and enduring personality characteristics such as optimism and extraversion.<sup>12</sup>

Recent empirical studies have developed reliable EQ assessment instruments while building its discriminate and predictive validity.<sup>13</sup> Studies suggest that EQ predicts academic success, multi-cultural counseling knowledge, empathy, optimism, social skills, and the ability to problem solve effectively.<sup>14–18</sup> Several studies have differentiated EQ from cognitive ability<sup>19</sup> and documented higher EQ levels in women and psychotherapists.<sup>15</sup> Using emotion and empathy subscores from a psychological battery given to medical students, EQ predicted better scores on some clinical performance examination scales.<sup>20</sup> Physician EQ has also been linked with patient satisfaction and trust<sup>21,22</sup> and medical student admissions interviewers can rate EQ reliably and predict what program of medical study the student will prefer.<sup>23</sup>

We conducted a pilot study of EQ in a sample of internal medicine residents in order to explore its relationship to clinical performance and burnout. The study goals were to 1) demonstrate the feasibility and predictive value of a brief self-report measure of EQ in medical residents, 2) elucidate the relationship between resident EQ, burnout, and clinical performance, and 3) stimulate interest in educational innovations designed to enhance EQ if EQ appears to be a clinically valuable construct.

## Methods

### Subjects and Study Design

We recruited a convenience sample of 28 categorical and primary care internal medicine residents from two ambulatory care clinics affiliated with an academic medical center. All second- and third-year residents were eligible and invited to participate. An independent research assistant conducted the informed consent process and administered the study instruments. Basic demographic data including gender, year of training, and type of program were collected upon consent (n=19/28 females, 15/28 PGY2's, 24/28 in primary care program). We measured EQ at the beginning (T<sub>1</sub>) and end (T<sub>2</sub>) of the academic year. We measured resident burnout once per month. Clinical performance measurements occurred throughout the academic year. Investigators were blinded to participant identities.

### Measures

**Emotional Intelligence**—Emotional intelligence was measured at the beginning of the study (EQ<sub>T1</sub>) and one year later (EQ<sub>T2</sub>) using the Emotional Intelligence Survey (EIS). The EIS is a 33-item self-report inventory with Likert-scale responses based on Salovey and Mayer's "ability" model of emotional intelligence. Sample items include "I find it hard to understand the nonverbal messages of other people," "I am aware of my emotions as I experience them," and "I have control over my emotions." In validation studies among 346 individuals, the EIS demonstrated high internal consistency (Cronbach's alpha=0.90) and acceptable test-retest reliability (0.78) as well as excellent construct, predictive, and discriminant validity.<sup>15</sup>

**Burnout**—We measured burnout using the Tedium Index. The Tedium Index is a 21-item, self-report questionnaire developed by Pines and colleagues to assess physical, emotional, and mental exhaustion. Participants use Likert-scale ratings to indicate how often they have felt a particular way (e.g. "resentful toward others, weary, trapped") in the past week. The overall burnout score represents the sum of all answered items with higher scores reflecting greater burnout. The Tedium Index has been cross-culturally validated in over 3,900 professionals from a wide range of disciplines, including health care, social work, and education. It has shown good test-retest reliability (0.89 at one-month) and a high internal consistency with a Cronbach's alpha of 0.91 to 0.93.<sup>24</sup>

**Clinical Performance**—We measured clinical performance by calculating composite summary scores for four prospectively chosen evaluation domains thought to be most closely related to emotional intelligence: overall clinical performance, humanism, medical interviewing, and professionalism. Original data for each domain came from electronic evaluation scores from supervising attending faculty. Relevant scores were obtained from multiple faculty evaluators in diverse formats (e.g. mini-CEX's, rotation evaluations, exit interviews) and across different clinical settings (inpatient ward rotations and ambulatory continuity clinics).

## Results

We recruited 24 residents from a total eligible sample of 34 second and third year primary care internal medicine residents for a primary care response rate of 70%. 4 additional categorical internal medicine residents who indicated interest in participation were concurrently added to the sample for a total n=28. Table 1 lists summary statistics for emotional intelligence, performance composites, and burnout. Baseline emotional intelligence scores resembled those found in community samples (M=124.78–130.94)<sup>15,18</sup> but were lower than those of psychotherapists (134.92)<sup>15</sup> and school counselors (132.79).<sup>14</sup> Male and female residents did not differ with respect to EQ scores. Emotional intelligence scores were higher for PGY3's especially at Time 2 but this difference was not significant. Emotional intelligence scores significantly increased from Time 1 to Time 2 (EQT<sub>2</sub>-T<sub>1</sub> mean = 5.76; range = -8 to 27; p=.016). The 12 month mean burnout score was 63.7 which is comparable to community samples of human service workers and business managers.<sup>24</sup>

EQT<sub>1</sub> did not correlate with performance measures or burnout scores (Table 2). EQT<sub>2</sub> was significantly correlated with the Interviewing Composite rating ( $r=0.427$ ,  $p<.05$ ), the Overall Performance scores ( $r=0.489$ ,  $p<.01$ ), and burnout ( $r=-0.443$ ,  $p<.01$ ). As EQT<sub>2</sub> scores increased, the Interviewing and Overall Performance scores also increased while burnout scores decreased. The change in EQ over time (EQT<sub>2</sub>-T<sub>1</sub>) was not related to performance or burnout scores.

## Discussion

In this study of internal medicine residents, EQ scores increased over the course of an academic year and higher year-end scores correlated with less burnout and higher overall clinical performance and interviewing ratings. The association with performance measures, in particular, suggests that the changes observed in EQ are likely to be of clinical significance.

The observed changes in EQ over time suggest that EQ can and did improve. These changes may have been due to normal maturation, life experiences, medical training, or some other unidentified variable. Further study could better determine if and how medical education impacts EQ. For example, our training program's weekly behavioral medicine seminar that includes communication skills, empathy, and professional balance and/or our monthly support groups may or may not have contributed to the changes in EQ. A recent systematic review suggests that similar multimodal, active learning sessions play an important role in teaching emotional skills.<sup>7</sup>

The correlations between EQ, performance, and burnout suggest other avenues for investigation. First, the association of EQ with performance measures underscores its potential significance for residency education and improved patient care. It is not clear why EQ correlated with some performance measures but not others. It seems essential to identify exactly how and when EQ affects performance and whether these "active ingredients" are

teachable. Educational interventions that aim to improve EQ and patient care could include teaching accurate empathy, communicating emotions, personal introspection, and mood management. A larger sample size and more direct performance assessments may begin to address these important possibilities. Secondly, the association of EQ with burnout suggests important avenues for ameliorating what has become a serious problem in graduate medical education that affects both patient and provider outcomes.<sup>25,26</sup> Although EQ<sub>T1</sub> did not prospectively predict burnout, the trend was in the expected direction and EQ<sub>T2</sub> significantly correlated with yearly average burnout. If EQ provides a burnout-buffering effect, residency training programs may consider incorporating EQ education into their wellness curricula. Qualitative analyses of resident well-being suggest that training in professional development, setting personal boundaries/balance, and maintaining a sense of self are key coping elements that would all fall within the scope of EQ.<sup>27</sup>

Although our study is the first to examine EQ, performance, and burnout in physicians, it has a number of limitations. The overall number of participants was low especially those with complete data for both Time 1 and Time 2. This limited statistical power may explain our failure to show correlations with baseline EQ (EQ<sub>T1</sub>) or with EQ changes over time (EQ<sub>T2</sub>-T<sub>1</sub>). Similarly, the small sample size made multivariate analysis and investigation of gender, ethnicity, and other demographic variables impractical. Although primary care internal medicine residents were the focus of recruitment (n=24/28), an additional 4 categorical internal medicine residents were added to the sample and included in the final analysis. Although the final results do not change if the 4 categorical residents are excluded, their inclusion does introduce greater variability in the sample. Moreover, while results may generalize to primary care internal medicine residents, the categorical resident sample is small and perhaps unrepresentative.

It is important to note that all of our findings are correlational in nature and do not necessarily demonstrate a causal relationship between EQ, performance, and burnout. Although most of our performance measures occurred within two months of time 2, some preceded the measurement of EQ<sub>T2</sub>. EQ<sub>T1</sub> temporally preceded all burnout measures, but it was only weakly correlated with burnout. EQ<sub>T2</sub> was more strongly correlated with burnout but was again measured after most burnout scores. A more careful, temporally-ordered trial and/or an active EQ manipulation could better address the nature of these potentially important relationships.

Despite these limitations, this pilot study suggests that further investigation of the role of EQ in medical education, professional competence, and burnout is justified. EQ may capture an important skill set that predicts professional and personal outcomes not predicted by current intelligence and achievement tests.<sup>28</sup> If EQ can be taught, interventions to promote it may lead to improved physician performance, well-being, and, most importantly, patient outcomes.

## Acknowledgments

**Funding:** This project was supported by NIH/OBSSR/NCCAM grant (K07 AT003131-01) awarded to Dr. Satterfield.

## References

1. Levinson W, Gorawara-Bhat R, Lamb J. A study of patient clues and physician responses in primary care and surgical settings. *JAMA* 2000;284:1021-7. [PubMed: 10944650]
2. Roter DL, Hall JA, Kern DE, Barker LR, Cole KA, Roca RP. Improving physicians' interviewing skills and reducing patients' emotional distress. A randomized clinical trial. *Arch Int Med* 1995;155:1877-84. [PubMed: 7677554]

3. Suchman A, Markakis K, Beckman H, Frankel R. A model of empathic communication in the medical interview. *JAMA* 1997;277:678–682. [PubMed: 9039890]
4. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract* 2000;49:796–804. [PubMed: 11032203]
5. Spiro H. What is empathy and can it be taught? *Annals of Internal Medicine* 1992;116:843–6. [PubMed: 1482433]
6. Smith RC, Dorsey AM, Lyles JS, Frankel RM. Teaching self-awareness enhances learning about patient-centered interviewing. *Acad Med* 1999;74:1242–8. [PubMed: 10587689]
7. Satterfield JM, Hughes E. Emotion skills training for medical students: A systematic review. *Medical Education* 2007;41:935–41. [PubMed: 17822414]
8. Novack DH, Suchman AL, Clark W, Epstein R, Najberg E, Kaplan C. Calibrating the physician: Personal awareness and effective patient care. *JAMA* 1997;278:502–509. [PubMed: 9256226]
9. Epstein RM. Mindful practice. *JAMA* 1999;282(9):833–9. [PubMed: 10478689]
10. Matthews DA, Suchman A, Branch W. Making “connexions”: enhancing the therapeutic potential of patient-clinician relationships. *Ann Intern Med* 1993;118:973–977. [PubMed: 8489112]
11. Lewis NJ, Rees CE, Hudson JN, Bleakley A. Emotional intelligence in medical education: Measuring the Unmeasurable? *Adv in Health Sciences Education* 2005;10:339–355.
12. Mayer, JD.; Salovey, P.; Caruso, D. Models of emotional intelligence. In: Sternberg, R., editor. *Handbook of Intelligence*. Cambridge, UK: Cambridge University Press; 2000. p. 396-420.
13. Ciarrochi JV, Chan AYC, Caputi P. A critical evaluation of the emotional intelligence construct. *Personality and Individual Differences* 2000;28:539–561.
14. Constantine MG, Gainor KA. Emotional intelligence and empathy: Their relation to multicultural counseling knowledge and awareness. *Prof School Counseling* 2001;5:131–137.
15. Schutte NS, Malouff JM, Hall LE, Haggerty DJ, Cooper JT, Golden CJ, Dornheim L. Development and validation of a measure of emotional intelligence. *Pers and Indiv Diff* 1998;25:167–177.
16. Schutte NS, Malouff JM, Simunek M, Mckenley J, Hollander S. Characteristic emotional intelligence and emotional well-being. *Cognition and Emotion* 2002;16:769–785.
17. Schutte NS, Malouff JM, Bobik C, et al. Emotional intelligence and interpersonal relations. *Jrnl of Soc Psychol* 2001;141:523–536.
18. Schutte NS, Schuettpeiz E, Malouff JM. Emotional intelligence and task performance. *Imagination, Cognition, and Personality* 2001;20:347–354.
19. Lam LT, Kirby SL. Is emotional intelligence an advantage? An exploration of the impact of emotional and general intelligence on individual performance. *Jrnl of Soc Psychol* 2002;142:133–143.
20. Stratton TD, Elam CL, Murphy-Spencer AE, Quinlavin SL. Emotional intelligence and clinical skills: Preliminary results from a comprehensive clinical performance evaluation. *Acad Med* 2005;80:S34–S37. [PubMed: 16199454]
21. Wagner PJ, Moseley MS, Grant MM, Gore JR, Owens C. Physician’s emotional intelligence and patient satisfaction. *Fam Med* 2002;34:750–754. [PubMed: 12448645]
22. Weng H, Chen H, Chen H, Lu K, Hung S. Doctors’ emotional intelligence and the patient-doctor relationship. *Med Ed* 2008;42:703–711.
23. Carrothers RM, Gregory SW, Gallagher TJ. Measuring emotional intelligence of medical school applicants. *Acad Med* 2000;75:456–463. [PubMed: 10824770]
24. Pines, AM.; Aronson, E.; Kafry, D. *Burnout: From Tedium to Personal Growth*. New York: Free Press; 1981.
25. Shanafelt TD, Bradler KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med* 2002;136:358–67. [PubMed: 11874308]
26. Ratanawongsa N, Wright SM, Carrese JA. Well-being in residency: Effects on relationships with patients, interactions with colleagues, performance, and motivation. *Patient Educ & Counsel* 2008;72:194–200.
27. Ratanawongsa N, Wright SM, Carrese JA. Well-being in residency. A time for temporary imbalance? *Med Educ* 2007;41:237–280.

28. McManus IC, Smithers E, Partridge P, Keeling A, Fleming PR. A levels and intelligence as predictors of medical careers in UK doctors: 20 year prospective study. *Brit med Jnl* 2003;327:139–142.

**Table 1**

## Summary Statistics

	<b>N</b>	<b>Mean (SD)</b>
EQT <sub>1</sub> <sup>*</sup>	26	124.58 (8.39)
EQT <sub>2</sub>	28	129.0 (10.0)
EQT <sub>2</sub> -T <sub>1</sub>	17	5.76 (8.17)
Humanism <sup>**</sup>	27	8.51 (0.35)
Interviewing	27	7.75 (0.34)
Professionalism	27	8.08 (0.38)
Global Performance	27	8.02 (0.35)
Burnout <sup>***</sup>	28	63.71 (12.38)

\* EQ scores may range from 33–165 with higher scores corresponding to higher EQ. EQT<sub>1</sub> measures were taken at the beginning of an academic year. EQT<sub>2</sub> measures were taken at the end of the same academic year. EQT<sub>2</sub>-T<sub>1</sub> is the change in EQ from time 1 to time 2.

\*\* All performance scores (Humanism, Interviewing, Professionalism, and Global Performance) are scored on 1–9 Likert scales with higher scores indicating superior performance.

\*\*\* Burnout scores were taken each month of the study and may range from 21–147 with higher scores indicating greater burnout. The final score used reflects an average burnout level over the 12 months of the study.

Table 2

## Correlation Matrix

	Global Perform	Interviewing	Humanism	Professionalism	Burnout	EQ1	EQ2
Global Perform	1						
Interviewing	0.411	1					
Humanism	0.407	0.145	1				
Professionalism	0.169	0.673	0.240	1			
Burnout	-0.192	-0.251	0.004	0.123	1		
EQ1 (n=17)	-0.062	0.032	0.111	0.096	-0.276	1	
EQ2 (n=22)	0.427*	0.489**	0.160	0.272	-0.443**	0.638**	1
EQ <sub>T2-T1</sub> (n=13)	0.433	0.419	0.011	0.222	-0.008	-0.110	0.696*

\* p&lt;.05 two tailed

\*\* p&lt;.01 two tailed