

# The effect of surgeon empathy and emotional intelligence on patient satisfaction

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**Abstract** We investigated the associations of surgeons' emotional intelligence and surgeons' empathy with patient-surgeon relationships, patient perceptions of their health, and patient satisfaction before and after surgical procedures. We used multi-source approaches to survey 50 surgeons and their 549 outpatients during initial and follow-up visits. Surgeons' emotional intelligence had a positive effect ( $r = .45$ ;  $p < .001$ ) on patient-rated

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patient-surgeon relationships. Patient-surgeon relationships had a positive impact on patient satisfaction before surgery ( $r = .95$ ;  $p < .001$ ). Surgeon empathy did not have an effect on patient-surgeon relationships or patient satisfaction prior to surgery. But after surgery, surgeon empathy appeared to have a significantly positive and indirect effect on patient satisfaction through the mediating effect of patients' self-reported health status ( $r = .21$ ;  $p < .001$ ). Our study showed that long-term patient satisfaction with their surgeons is affected less by emotional intelligence than by empathy. Furthermore, empathy indirectly affects patient satisfaction through its positive effect on health outcomes, which have a direct effect on patients' satisfaction with their surgeons.

**Keywords** Emotional intelligence · Empathy · Physician · Patient satisfaction · Health status

## Introduction

Research has shown that high levels of physician empathy and emotional intelligence increase patient satisfaction (Weng et al. 2008; Zachariae et al. 2003), compliance (Price et al. 2006), and health status (Hojat 2007; Neumann et al. 2007; Neuwirth 1997). Empathy is a cognitive attribute that involves understanding another person's perspectives and the capacity to communicate that understanding (Hojat et al. 2002). Emotional intelligence is the ability to perceive, integrate, and regulate emotions (Wong and Law 2002). Whereas empathy is a deeper, heartfelt sense of another's experience, emotional intelligence is the ability to perceive emotions and outwardly regulate them in oneself and in others.

Studies have found differences between internists and surgeons with regard to the influence of empathy on patient-physician relationships and patient satisfaction. One study (Levinson and Chaumeton 1999) suggested, for example, that although patients might appreciate a discussion of psychosocial issues with their primary care physicians, they might not appreciate similar discussions with their surgeons.

Many of the studies on the relationship of empathy (Di Blasi et al. 2001; Neumann et al. 2007; Price et al. 2006; Weng et al. 2008) and emotional intelligence (Stratton et al. 2005; Wagner et al. 2002) with patient-physician relationships have focused on internists and very few have included surgeons. One study (Levinson and Chaumeton 1999) that tried to categorize the language used on audio recordings of surgeon-patient consultations found that, on average, only 1% of the dialog involved the physician's expressing empathy. Another study found that patients were reluctant to recommend surgeons who failed to show an interest in them or to explain the patient's medical condition to the patient's satisfaction (McLafferty et al. 2006). Furthermore, although much of the research shows that a lack of empathy leads to patient dissatisfaction, this research does not show that having empathy substantially increases patient satisfaction (Ambady et al. 2002; Levinson and Chaumeton 1999; McLafferty et al. 2006).

We know that empathy improves the relationship between internists and their patients, but we cannot say with any certainty that empathy does the same for the surgeon-patient relationship. What does it take for a surgeon to have better relationships with patients or to improve patient satisfaction? If failing to express empathy adversely affects patient satisfaction but expressing empathy does not increase patient satisfaction, what mechanism explains the difference?

In this study, we investigated the association of emotional intelligence and empathy with surgeon-physician relationships. We also evaluated patient satisfaction with surgeons and patient perceptions of their own health before and after surgery.

Our hypotheses were based on a model which examined the predictors of patient satisfaction. We hypothesized that surgeons' age, emotional intelligence, and empathy level predicted the quality of patient-surgeon relationships. We also hypothesized that higher surgeon age, higher emotional intelligence, and greater empathy predicted better patient-surgeon relationships. We further hypothesized that a better patient-surgeon relationship would be positively associated with greater patient satisfaction and that greater patient satisfaction before surgery would be positively associated with higher satisfaction 2 weeks after surgery. Finally, we hypothesized that surgeon empathy would be positively associated with patients' self-perceived health and that patient health and patient satisfaction before surgery would have a positive effect on patient satisfaction 2 weeks after surgery.

## Methods

### Design, samples and setting

We interviewed 50 surgeons and 896 patients who were about to undergo surgery from July 2006 to August 2007 (Table 1). Each surgeon filled out two questionnaires to evaluate their general relationships with their patients (Table 1). To avoid single-source or single-rater bias (Podsakoff et al. 2003), we asked three nursing directors to rate the emotional intelligence of 32 surgeons in one hospital and two nursing directors to rate the emotional intelligence of 18 of surgeons in another hospital.

Study personnel interviewed each patient twice. Before surgery, two nurses administered patient-physician relationship and patient satisfaction scales to patients in the outpatient department after the patients had met with their surgeons. The nurses obtained informed written consent from each patient and attending surgeon. The institutional review boards of the two hospitals reviewed and approved the protocol for this study.

**Table 1** Variables, respondents, and item reliability

Variable	Respondents	Number of items	Reliability
<i>Surgeons</i>			
Emotional intelligence	(1) Physicians	16	.91
	(2) Nursing directors	16	.85
Empathy	Surgeons	20	.72
<i>Patients</i>			
Patient-surgeon relationship	Patients	9	.89
Satisfaction with surgeon immediately before surgery	Patients	2	.90
Satisfaction with surgeon after surgery	Patients	2	.86
Self-reported health status	Patients	2	.72

## Instruments

The interviewers asked each surgeon their age, sex, and number of years of experience. Surgeons then completed the Wong and Law Emotional Intelligence Scale (WLEIS) (Wong and Law 2002), an ability-based measure of emotional intelligence. This instrument is used to measure the ability to understand one's own emotions and those of others and to regulate and use one's own emotions. The WLEIS items include "I really understand what I feel" and "I have a good control of my own emotions." These items are scored on a seven-point Likert scale (where 1 = strongly disagree and 7 = strongly agree). Physicians also completed the Jefferson Scale of Physician Empathy (Hojat et al. 2002), whose items include, "I try to imagine myself in my patient's shoes when providing care to them" and "I try not to pay attention to my patients' emotional in interviewing and history taking." These items are also rated using a seven-point Likert scale. This measure has been validated and found to yield a Cronbach's alpha of .81 (Hojat et al. 2002).

We measured patient-surgeon relationships using the Patient-Doctor Relationship questionnaire (PDR-9) (Van der Feltz-Cornelis et al. 2004), which consists of nine items rated on a seven-point Likert scale. This questionnaire contains such items as "My physician is dedicated to helping me," "My physician has enough time for me," and "I can talk to my physician." This instrument has been validated and found to yield a Cronbach's alpha score of .94.

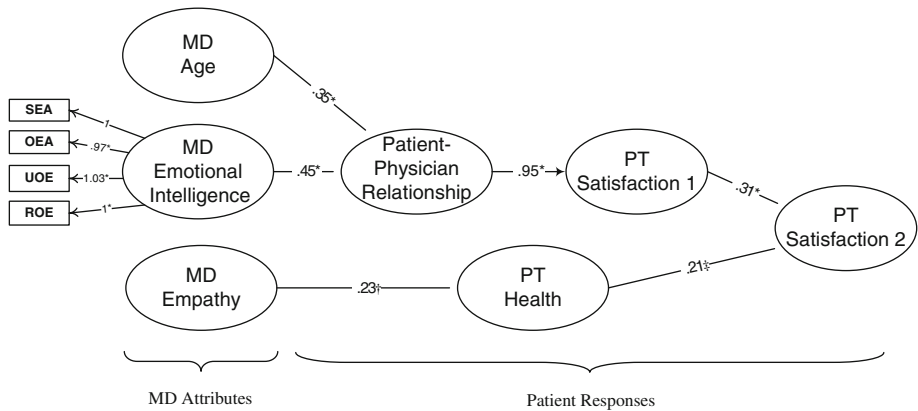
We used only two items to measure patient satisfaction: "I am satisfied with the care provided by my physician" and "I would recommend this physician to my friends and family members." During the follow-up telephone interview, nurses asked patients to answer the two patient satisfaction questions again and two additional questions: "Do you agree that your health status has improved?" and "Are your daily activities limited by your current health status?" Patients answered both questions by giving a score from 1 (totally disagree) to 7 (strongly agree).

## Statistical analysis

Descriptive analyses were performed using SPSS Version 12 (SPSS Inc.). We created a composite score for emotional intelligence from the surgeon self-ratings and the nursing directors' ratings of surgeons' emotional intelligence on the related instrument. We tested the causal model for predicting patient-physician relationships and the patient satisfaction with structural equation modelling using LISREL 8.71. The structural equation modelling involved multiple regression analysis and path analysis, allowing us to simultaneously test the relationships among many variables. The unit for structural equation modelling analysis was the individual surgeon. We aggregated the patients' data for each surgeon by averaging the scores for each variable.

Some studies (Davis et al. 2006) suggest that physicians have a limited ability to self-assess, especially with regard to their own social-psychological abilities. Because of their observational and intellectual skills, nurses might be more reliable assessors of physician characteristics (Butterfield et al. 1987; Weng et al. 2008). We combined the nursing directors' evaluation of each surgeon's emotional intelligence with the surgeons' assessment of their own emotional intelligence. We used these data as a latent variable in the structural equation modelling analysis. We considered a  $p$  value of  $<.05$  to be significant.

When running the structural equation model, we added only those variables found to have significant effects (Fig. 1). We deleted non-significant paths from the final model. We



**Fig. 1** Results of structural equation modeling for surgeon empathy on patient perception of outcomes and patient satisfaction at initial and follow-up visits. \* $p \leq .001$ ,  $^{\dagger}p \leq .01$ ,  $^{\ddagger}p \leq .05$ . Note: Satisfaction 1 = patients' satisfaction with physicians' service at initial visit, Satisfaction 2 = patients' satisfaction with physicians' service at follow-up visit. *PT Health* patients' perception of health status, *SEA* self-emotion appraisal, *OEA* other emotional appraisal, *UOE* use of emotion, *ROE* regulation of emotion, *MD* medical doctors

combined the scores of the four dimensions of emotional intelligence to create a composite score and used emotional intelligence as one latent variable.

## Results

Initially, 736 of 896 consecutive patients agreed to participate in the interviews, for a response rate of 82.1%. Of the 736 patients the nurses called 2 weeks after surgery, 549 agreed to participate, for a follow-up rate of 74.6%.

The internal consistency of the emotional intelligence scales for surgeons' self-ratings was .91 and for external ratings by nursing directors was .85. The intra-class correlation between surgeons' self-ratings and external ratings from the nursing directors was .48. In our validation of these instruments, the Cronbach's alpha ranged from .72 to .89 for the patient variables and from .72 to .91 for the surgeon variables (Table 1).

As Table 2 shows, we found no significant differences in the genders, ages, and marital status of patients before and after the surgery. Most patients (70.9%) were married and they had a mean age of  $46.08 \pm 18.99$  years. The surgeons were predominantly male (97.1%) and had a mean age of  $43.14 \pm 8.59$  years.

As can be seen in Table 3, a correlation matrix included all the variables. Surgeons with more years of experience tended to have higher emotional intelligence in all four dimensions: self-emotion appraisal, other emotional appraisal, use of emotion, and regulation of emotion ( $r = .24-.40$ ,  $p < .01-.05$ ). The four dimensions of emotional intelligence were positively and significantly correlated with one another other ( $r = .87-.92$ ,  $p < .001$ ). Patients considered surgeons with higher emotional intelligence to have better patient-surgeon relationships ( $r = .49-.57$ ) and patients had higher levels of satisfaction ( $r = .40-.50$ ) with these surgeons' performance ( $p < .001$ ). Patients of surgeons with higher levels of empathy had better self-perceived health status ( $r = .25$ ,  $p < .05$ ). Ultimately, patients with better self-perceived health status had higher levels of satisfaction with their surgeons ( $r = .26$ ,  $p < .05$ ) 2 weeks after surgery.

**Table 2** Patient demographics before and after the surgery

	Before surgery (n = 736) n (%)	After surgery (n = 549) n (%)
<i>Gender</i>		
Male	387 (52.6)	285 (51.9)
Female	349 (47.4)	264 (48.1)
Mean age, years (SD)	46.08 (18.99)	45.40 (19.07)
<i>Marital status</i>		
Single	196 (26.6)	146 (26.6)
Married	522 (70.9)	390 (71.0)
Other	18 (2.4)	13 (2.4)

SD standard deviation

Older surgeons ( $r = .35$ ,  $p < .001$ ) and those with a higher level of emotional intelligence ( $r = .45$ ,  $p < .001$ ) were more likely to have a positive relationship with their patients. Surgeons with better patient-surgeon relationships appeared to have more satisfied patients ( $r = .95$ ,  $p < .001$ ). When patients considered surgeons more empathetic, these patients were more likely to perceive themselves as healthy two weeks after surgery ( $r = .23$ ,  $p < .005$ ). Ultimately, better perceived health in patients was positively associated with higher patient satisfaction with their surgeons ( $r = .21$ ,  $p < .01$ ).

The final model proved to be valid (chi square/df = 41.84/30,  $p = .073$ ) and to have a good fit (goodness of fit = .89 and root mean square error of approximation = .076). The model explained 46% of the patient-surgeon relationship assessment, 82% of patient satisfaction with their surgeon before surgical care, 10% of patient satisfaction with their surgeon at follow-up, and 9% of the patients' perceived improvement in health status.

## Discussion

This study showed that surgeon age and emotional intelligence scores had significant and positive effects on the patient-surgeon relationship and on patient satisfaction with their surgeon before surgery, a finding that several other studies have also reported (Sitzia and Wood 1997; Weng et al. 2008). One study, which involved interns' evaluations of their own emotional intelligence and not external evaluations, failed to find a significantly positive relationship between emotional intelligence and the patient-surgeon relationship (Wagner et al. 2002). This result is not surprising because several previous studies have reported that the ratings of others (such as nurses) are more reliable than the self-ratings of physicians (Butterfield et al. 1987; Di Matteo and Di Nicola 1981; Weng et al. 2008). Our study did not show that a surgeon's emotional intelligence has a direct effect on patient satisfaction. Although empathy might not have a direct effect on patient satisfaction, as our study showed, empathy still exerts an influence on patients' perception of their own health improvement, which others have called an indirect effect (Baron and Kenny 1986).

Although many studies (Hojat 2007; Kim et al. 2004; Neumann et al. 2007) have reported an association between empathy and patient satisfaction, most were based on initial evaluations before health outcomes were known and most did not include physician ratings of their own empathy. Instead, these studies relied on patient evaluations of physician empathy, which could involve a type of bias known as common method variance

**Table 3** Correlation matrix of patient variables

Variable	Means $\pm$ SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	43.18 $\pm$ 8.70	1											
2. Sex	0.97 $\pm$ 0.17	.07	1										
3. Years of experience	10.40 $\pm$ 6.34	.67***	.08	1									
4. Self-appraisal emotion	4.47 $\pm$ 1.00	.02	-.02	.22	1								
5. Other-emotion appraisal	4.18 $\pm$ 1.00	.07	.01	.26*	.87***	1							
6. Use of emotion	4.40 $\pm$ 1.17	.17	.06	.35***	.92***	.88***	1						
7. Regulation of emotion	4.31 $\pm$ 1.18	-.01	.01	.20	.91***	.89***	.90***	1					
8. Empathy	5.87 $\pm$ 0.66	-.20	.14	-.05	.12	.11	.09	.19	1				
9. Patient physician relationship at 2-week follow-up	4.23 $\pm$ .18	.08	-.05	.20	.50***	.53***	.54***	.59***	.10	1			
10. Patient satisfaction with surgeon at initial visit	4.25 $\pm$ .28	.19	.05	.25*	.41***	.46***	.51***	.53***	.03	.87***	1		
11. Patient satisfaction with surgeon at 2-week follow-up	4.28 $\pm$ .20	.21	.13	.05	-.03	-.11	.09	-.03	.03	.18	.33**	1	
12. Patient's self-reported health status	3.21 $\pm$ .35	-.15	.26*	.08	.02	.00	.06	.04	.24*	-.01	.08	.26*	1

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

(Podsakoff et al. 2003). The authors of these studies might, therefore, have exaggerated the extent to which empathy directly affects patient satisfaction.

How surgeons express empathy (e.g., by telling patients how to take better care of themselves after surgery) and what patients perceive as empathy might require further exploration. One previous study (Levinson and Chaumeton 1999) used different criteria to measure patients' satisfaction with their internists and surgeons. These authors reported that health outcomes have a direct effect on patients' satisfaction with their surgeons. The authors also found that physician empathy had a positive effect on patients' perceptions of their own health outcomes but not on the patient-physician relationship. Therefore, patients' perceptions of their own health outcomes ultimately influence their satisfaction with their surgeons.

We hypothesized that empathy and emotional intelligence have an impact on the patient-surgeon relationship. However, we found that surgeons' emotional intelligence only had a positive association with the patient-surgeon relationship before surgery, whereas surgeons' empathy had a positive association with patients' self-perceived health after surgery. From the perspective of management science, empathy and emotional intelligence are related to two types of emotional labour—surface and deep acting. Larson and Yao (2005) argue that surface acting refers to a physician's behaving in accordance with the “displayed rules” (expected behaviours), whereas deep acting generates actual empathy-consistent emotional and cognitive reactions. Both emotional intelligence and surface acting involve the use of specific skills (e.g., emotional regulation and perceptions of others' emotions) at appropriate times. In both empathy and deep acting, responses are heartfelt. Emotional intelligence and surface acting involve rule-generated responses, whereas empathy and deep acting involve emotion-generated responses.

From this perspective, although emotional intelligence (surface acting) might influence patient satisfaction initially over the short term, it can lose its effect over the long term after outcomes are known or patients have perceived heartfelt empathy in their surgeons. More multidisciplinary studies are needed to elucidate the dynamics of emotional intelligence, emotional labour, and empathy and their effects on the patient-physician relationship and patient satisfaction.

We found that patients eventually rated their physicians based on empathy. However, one study (Carmel and Glick 1996) reported that physicians agreed that although empathy is important for being a good physician, it has little impact on physicians' professional advancement. Hospitals hoping to increase patient satisfaction might want to reconsider their criteria for professional physician promotion and offering continuing medical education programs addressing patient satisfaction.

### Study limitations

Our study had several limitations. Our patient sample might have suffered from selection bias in that satisfied patients might have been more likely to participate in this study than dissatisfied patients. This potential selection bias might have led to overestimates. In addition, we used a self-reported and unvalidated measure of patient health status. Further research is needed to examine the association between patient satisfaction and patient health status at two-week follow-up. Also, patients in our study didn't rate their surgeons' empathy. Further research is needed to compare patients' and physician's self-ratings of empathy and their associations with patient satisfaction. Furthermore, this study might have suffered from the Hawthorn effect. Because the surgeons in our study were aware that this study was ongoing, they might have intentionally acted in a friendlier or warmer way



with patients during the study period. Finally, we did not collect information on the different amounts and kinds of empathy that patients might have required, depending on the complexity and type of procedure they underwent.

## Conclusions

Our study showed that higher surgeon age and emotional intelligence levels had a positive effect on patients assessments of the patient-surgeon relationship during the initial visit. However, by the follow-up visit, surgeon empathy and health outcomes had replaced surgeon age and emotional intelligence as the determining factors for overall patient satisfaction. These findings suggest that for surgeons, long-term patient satisfaction is affected less by emotional intelligence than empathy. Furthermore, our study shows that empathy indirectly affects patient satisfaction through its positive effect on health outcomes, which have a direct effect on patients' satisfaction with their surgeons. Further research is needed to determine how these findings might be applied to improving healthcare and patient satisfaction.

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