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**In which context is physician empathy associated with cancer patient quality of life?**

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**Running title:** Physician empathy, type of consultation and patient quality of life

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## ABSTRACT

**Objective.** In cancer settings, physician empathy is not always linked to a better patient emotional quality of life quality of life (eQoL). We tested two possible moderators of the inconsistent link: type of consultation (bad news versus follow-up) and patient emotional skills (emoSkills, i.e., the way patients process emotional information).

**Methods.** In a cross-sectional design, 296 thoracic and digestive tract cancer patients completed validated questionnaires to assess their physician empathy, their emoSkills and eQoL. Moderated multiple regressions were performed.

**Results.** In follow-up consultations, physician empathy was associated with a better eQoL in patients with low or average emotional skills. Those with high emotional skills did not benefit from physician empathy. Their eQoL was nonetheless very good. In bad news consultations, the pattern was reversed: only patients with average or high emotional skills benefited from physician empathy. Those with low emotional skills were not sensitive to it and presented a poor eQoL.

**Conclusion.** Medical empathy is important in all consultations. However, in bad news consultations, patients with low emoSkills are at risk of psychological distress even with an empathetic doctor.

**Practice implications.** Accordingly, physicians should be trained to detect patients with low emoSkills in order to refer them to supportive care.

**Keywords:** bad news, cancer; emotional intelligence; empathy; quality of life.

## 1. Introduction

Physician empathy can be defined as the ability to understand the experiences, concerns and perspectives of patients coupled with a capacity to communicate this understanding to patients in a warm and compassionate manner [1]. According to popular belief, physician empathy is vital for cancer patients to maintain an optimal emotional quality of life (eQoL). Physician empathy is believed to help patients to avoid despair and to maintain hope and a positive outlook in the face of cancer. However, the scientific question of whether physician empathy is related to better patient outcomes has not yet been resolved. In a literature review, the positive effect of physician empathy on cancer patient eQoL was proven in ~~only~~ half of the reviewed studies only [2]. Therefore, the effect of physician empathy on patients could be explained by hidden factors (i.e. moderators). Two moderators seemed of particular interest.

First, it may be that physician empathy is beneficial for certain types of patients only, depending on their emotional skills. Emotional skills refer to the ability to address and process emotional information. They encompass the identification, understanding, expression and regulation of one's emotions and those of others [3]. Social support has demonstrated a positive effect only in the receivers of support who express their emotions [4], correctly process the supportive message [5] and regulate their emotions [6]. In the same way, patients may benefit from physician empathy only if they have these same emotional skills. This pattern of results has also been found in breast cancer patients receiving emotional support on the Internet. The supportive messages received online had positive effects only in women with high emotional skills [7]. If patients do not possess the emotional skills to process physician empathy as a supportive resource fostering positive coping, physician empathy can be useless or even wrongly perceived. For example, one study revealed that the same statement on the part of a physician was interpreted by some patients as caring while others interpreted it as uncaring [8], showing strong patients' variability in the processing of the same message.

A second possible moderator accounting for why empathy may or may not be beneficial for patients could be the type of consultation in which empathy is assessed. If the effect of empathy is tested in a consultation with a light emotional load, there is less reason to see an effect of physician empathy. Conversely, in an emotionally charged consultation such as a "bad news" consultation, the effect of empathy could be stronger since empathy becomes highly expected and important in this context. It has been shown that, when patient distress is high, physician empathy results in better patient satisfaction and less distress, whereas empathy is not related to patient outcomes in non-distressed patients ~~that oncologists' empathy lessens patient anxiety in bad news consultations but not in consultations with good test results~~ [9,10]. These studies support our hypothesis. However, further

research is warranted regarding the role of consultation types, as data are lacking on this topic. Furthermore, ~~this study these studies [9,10]~~ did not consider any patient characteristics in processing physician empathy.

To summarize, our goal was to understand the conditions in which physician empathy could be beneficial for patients' emotional eQoL in cancer settings. The present study is the first to adopt a new perspective on physician empathy. In previous research, ~~the effect of empathy the beneficial effect on physician empathy on patient outcomes was placed solely on the level of physician empathy as if they were only physicians in patient-physician consultations and as if only physician empathy (its level and nature) was important to patient outcomes. was placed solely on physicians as if they were the only participants in patient-physician consultations.~~ The research into empathic opportunities or emotional cues also focuses on physicians' behaviors a lot. It often examines the number and nature of physicians' responses to patients' emotional cues [e.g. 11,12], but does not link the physician answers to patient outcomes considering interactions between physicians and patients.

We assume on the contrary that physician empathy **should be studied in interaction with** patient emotional skills and the type of consultation; this **should** explain patient eQoL as follows:

- Hypothesis 1: regardless of patient emotional skills, physician empathy will not be associated with patient eQoL in follow-up consultations (i.e. without bad news), as this type of consultation is not supposed to be emotionally charged;
- Hypothesis 2: in bad news consultations, physician empathy will improve the eQoL of patients with good emotional skills, as these skills are necessary to process this empathy and benefit from it.

## **2. Methods**

### *2.1. Design and procedure*

The study was carried out using patient self-reported questionnaires in a cross-sectional design. Physicians working at the thoracic and digestive cancer departments of the University of Lille (France) and at University Cancer Center Leipzig (Germany) were invited to participate in the study. They proposed the study to patients meeting the inclusion criteria (see below) at the end of a consultation. Patients were given a written detailed study description, informed consent form and the questionnaires. If they agreed to participate, they signed the informed consent and had one week to complete the questionnaires and return them to the research team in a prepaid envelope provided.

The study protocol was approved by the French national advisory committee for the processing of information in health research (approval number 14.545) and by the Ethics committee of the Medical Faculty of the University of Leipzig (AZ 409-15-16112015).

## 2.2. Participants

Inclusion criteria for physicians were: dealing with thoracic or digestive tract cancer patients in an outpatient hospital setting. Thoracic and digestive tract cancers were chosen because of the high prevalence of treatment failure and bad news consultations in this type of cancer. Inclusion criteria for patients were as follows: aged  $\geq 18$  years old, aware of the cancer diagnosis and a WHO performance status  $< 4$ . Exclusion criteria were as follows: a pending therapeutic strategy and a psychiatric disorder altering reasoning and judgment reported in the medical file. Cohen's sample size recommendation for an alpha level of .05 (2-tailed), 90% power, 17 predictors, and an anticipated small-medium effect size of 0.10 ( $f^2$ ) in a multiple regression model is 262 participants [13]. As we anticipated 10% of missing data, our aim was to recruit 295 patients.

## 2.3. Measures

*Patient perception of physician empathy (empathy)* was measured using the Consultation And Relational Empathy (CARE) measure, a 10-item 5-point Likert scale providing an overall score of empathy [14,15] with a higher score meaning higher empathy. Items of the scale deal with the patient's perception of physician listening, respect, clear explanations and information provision, whether the physician (from the patient's point of view) fully understand his/her concerns, and shows care and compassion, e.g. "the doctor fully understood my concerns" and "the doctor was interested in me as a whole person". Cronbach's alpha ( $\alpha$ ) was 0.95 in our sample.

*Patient emotional skills* were assessed using the Short-Profile of Emotional Competence (S-PEC) scale [3], a 20-item 5-point Likert scale providing two scores of emotional skills, one for the identification of emotions,  $\alpha = 0.76$ , e.g. "When I feel good, I can easily tell whether it is due to being proud of myself, happy or relaxed", and the other score for the understanding, expression and regulation of emotions,  $\alpha = 0.70$ , e.g. "I don't always understand why I respond in the way I do" (reversed), "It is easy for me to explain my feelings to others" or "I find it difficult to handle my emotions" (reversed). Higher scores represent higher emotional skills.

*Patient emotional quality of life (eQoL)* was assessed using the emotional dimension of the Functional Assessment of Cancer Therapy- General (FACT-G), a 6-item 5-point Likert scale [16,17]. Higher scores represent a *worse* quality of life. Examples of items are "I feel sad", "nervous", "I worry about dying", and "I am losing hope in the fight against my illness".

*The type of consultation* was reported by the physician at the end of the consultation according to the following rule: if the patient was informed of cancer recurrence or a change in therapy due to cancer progression or the end of active treatment, this was considered a “bad news consultation”, otherwise it was a “follow-up consultation”.

*Sociodemographic data* were self-reported by patients in the questionnaire they had to fill in.

*Medical data* were reported by the clinical research associate.

#### *2.4. Statistical analysis*

Multiple regressions were performed using the PROCESS macro for SPSS to test the three-way interaction between **patient-reported physician empathy**, emotional skills and the type of consultation, controlling for sociodemographic and medical data. After checking for multicollinearity between variables, the stage of cancer was discarded because of its strong link to the treatment aim  $\chi^2(6)=46.7, p<.001$  and because of 28% of missing data for this variable, which would entail too great a loss of sample and power.

Two regressions models were tested, one with the “identification” dimension of patient emotional skills (and its interaction with empathy and the type of consultation) and the other model with the “understanding, expression, regulation” dimension of patient emotional skills and the interaction. The interaction was plotted using the mean  $\pm$  one standard deviation and the Johnson-Neyman technique was used to determine the levels of patient emotional skills at which **patient-reported physician empathy** is associated or not with eQoL. All tests were two-sided.

### **3. Results**

#### *3.1. Descriptive results*

Twenty physicians recruited 296 patients from January 2015 to July 2016. Physicians enrolled from 1 to 53 patients, with 7 physicians enrolling more than 15 patients each and a total of 253 patients for these 7 physicians. Most patients were French retired men with thoracic cancer, living in a couple and with no more than a high school education. Physicians were mostly oncologists, with a mean age of 40 years (see Table 1 for all the descriptive results).

#### *3.2. Prediction of patient eQoL ~~prediction~~ with the “understanding, expression and regulation” dimension of patient emotional skills*

The regression model including this dimension of patient emotional skills explained 25% of the patient eQoL. The only controlled variable that was significantly associated with the outcome was the

professional situation: being employed ~~greatly damaged~~ **was associated with a poorer** eQoL compared to retirement ( $p < .006$ ). The hypothesized interaction between patient emotional skills, **patient-reported empathy** and the type of consultation was significant at  $p < .02$  and responsible for 2% of  $R^2$  (Table 2). In follow-up consultations, **patient-reported physician empathy** was significantly associated with a better eQoL for patients with low or average emotional skills but not for patients with high emotional skills (Figure 1 and Table 3). The latter had a rather good eQoL regardless of the empathy level. **Patient-reported physician empathy** was associated with patients' eQoL for patient emotional skills lower than 3.71, which represents 72% of patients in this situation. In this type of consultation, **patient-reported physician empathy** did not interact with patient emotional skills (effect = 0.11, standard error = 0.07,  $t = 1.42$ ,  $p = 0.15$ ).

Conversely, in bad news consultations, **patient assessment of physician empathy was not associated with eQoL in patients with low emotional skills whereas perceived empathy was associated with a better eQoL in patients with high emotional skills.** ~~patients with low emotional skills did not benefit from their perception of physician empathy whereas patients with average or high emotional skills did.~~ Patients with low emotional skills had a bad eQoL regardless of empathy, whereas patients with average or high emotional skills were sensitive to empathy: the more empathetic their physician was **perceived**, the better their eQoL was. **Patient-reported physician** empathy was associated with patient eQoL for patient emotional skills higher than 3.27, which represents 46% of patients in this situation. In this type of consultation, **patient-reported empathy** interacted with patient emotional skills at  $p = .06$  (effect = -0.17, standard error = 0.09,  $t = -1.89$ ,  $p = 0.06$ ).

### *3.3. Prediction of patient eQoL with the "identification" dimension of patient emotional skills*

The regression model including this dimension of patient emotional skills explained 18% of patient eQoL. Neither this dimension of patient emotional skills ( $p = 0.46$ ) nor the hypothesized interaction (i.e. the 3-way interaction,  $p = .81$ ) were significantly associated with the outcome (data not shown).

## **4. Discussion and Conclusion**

### *4.1. Discussion*

This study demonstrates, for the first time to the best of our knowledge, that the effect of **patient-reported physician empathy** on cancer patient eQoL depends on the type of consultation ("bad news" versus "follow up") and on patient emotional skills.

Contrary to our first hypothesis, in follow-up consultations, **patient-reported physician empathy** was significantly beneficial for most patients (72%). Only those with the highest emotional skills (28%) did not benefit from it. However, the latter did not need physician empathy: their eQoL was already

good regardless of **their perception of** physician empathy. This confirms previous data showing that emotional skills are associated with better health in the general population [18,19] and in cancer patients [20]. This is why when the consultation does not bring bad news, as in follow-up consultations, these patients have enough personal resources (i.e. good emotional skills) to cope with cancer. However, contrary to our expectations, the 72% of patients with low or average emotional skills benefited from **perceived** empathy in follow-up consultations. This means that, even in consultations that are less emotionally charged, **patient perception of** physician empathy is still required and useful for the majority of patients. This suggests that even if a consultation is a standard follow-up consultation from a medical point of view (i.e. without medical bad news), from the patient's point of view it is still a stressful situation with a great deal of uncertainty and eQoL issues to cope with, explaining the need for physician empathy. It is therefore important to stress the importance of **patient-perceived** physician empathy even in follow-up consultations.

Regarding bad news consultations, our second hypothesis was confirmed: only those patients with average or high emotional skills (46%) benefited from **perceived** physician empathy to gain a better eQoL. In spite of the very high emotional load of this kind of consultation, **perceived** physician empathy can still benefit 46% of patients so that its importance should not be minimized. However, as bad news consultations are particularly difficult, patients with low emotional skills (54%) had a poor eQoL **whatever their perception of** physician empathy. **In bad news consultations, both emotional and cognitive load can be high. Emotional load can be high due to the bad news and cognitive load can also be high due to a change of treatment toward a palliative treatment.**

**Moreover, it sometimes implies shared-decision making regarding the patient participation in a randomized controlled trial to test a new medical option, which is a cognitive demanding task. In patients with average and high emotional skills, the cognitive load of the consultation could help to reduce anxiety and to remember the content of the consultation, including the empathic words of physician. Indeed, in healthy controls (e.g. people with average or high emotional skills) under threat, experimental studies have demonstrated that a cognitive task may successfully direct attention away from anxiety and facilitates work memory [21–23]. However, these results are not true in patients with anxiety disorders [24] (e.g. people with low emotional skills). Under threat, the latter's memory is impaired even with a cognitive task to perform. Therefore, we think that patients with high emotional skills can switch from the emotional load of the consultation to cognitive attention to medical information given by the physician (reducing their anxiety and increasing their memory of the consultation, thus benefiting of physician empathic and comforting words) while patients with low emotional skills focus on emotional regulation only, which prevent them to remember the consultation accurately and benefit from physician empathy. Data showing an association between low emotional regulation and dissociation [25] are in line with this**



**reasoning. Indeed, dissociation involves disruptions in the usually integrated functions of memory, identity, and perception of self and environment. This dissociation would explain these patients' inability to benefit from the perceived empathy of their physician.** This is why supportive care such as psychologists, psychiatrists or educational programs, should be proposed to these patients as the empathy of their physician will not be enough to alleviate their distress. It might be helpful for physicians to be aware of these results to avoid unnecessary self-blame and an overestimation of their power: in bad news consultations, they cannot alone help patients who do not have a certain level of emotional skills. Some physicians may appreciate support to handle such a difficult situation.

#### *4.2. Study limitations*

The cross-sectional design prevents causal directions. We think that **perceived** empathy leads to a better patient eQoL, but it might also be that a high eQoL leads to a higher perceived empathy. To confirm the hypothesized direction of the link, the same study should be carried out in a longitudinal design. Another limitation is the absence of available data about non-responders, which leads to an unclear sample bias. Patient eQoL was rather good in the sample, even in bad news consultations. In a sample with a lower eQoL, the beneficial association of patient-reported physician empathy and patient eQoL could be lower or still present but for a smaller proportion of patients. Lastly, the nature of the consultation (bad news versus follow-up) was reported by physicians. Patients' perception of the nature of consultations might be more insightful.

#### *4.3. Practice implications*

Even if follow-up consultations are not emotionally loaded from a clinical point of view, physicians should keep in mind that in this type of consultations their empathy is however important and beneficial for patient quality of life. In bad news consultations, their empathy is still important and beneficial, but only for patients with high emotional skills. In these consultations, patients with low emotional skills are at risk of psychological distress even with an empathetic doctor. **However, as these patients can benefit from physicians' empathy in a less emotionally loaded context, once they have processed the bad news, they could benefit from physician empathy again. Therefore, considering patients with low emotional skills, the consultation following the bad news one would have more impact on patient eQoL than the bad news consultation itself. If necessary, patients could still be referred to supportive care. In any cases,** patient emotional skills should ~~thus~~ be addressed. ~~On the patient side~~, there is mounting evidence that emotional skills can be increased by training [26–28]. On the physician side, a recent meta-analysis of empathy training demonstrated its effectiveness in increasing medical empathy [29], thus training should still be encouraged. Courses could be improved by giving physicians clues to easily detect patients with low emotional skills so

that they can refer them quickly to supportive care as their empathy will not be enough to alleviate the distress of these patients. **By definition, patients with low emotional skills do not identify, understand and express their emotions easily. In a highly loaded emotional context such as the oncological setting, their attitude can seem weird as if they were not concerned by cancer and refused to believe what happened. Poor emotional skills are indeed highly correlated to avoidant coping [30]. Whether patients express or not emotions, both spontaneously and in response to physician disclosure of bad news, should be a first clue to detect patients with low emotional skills. Furthermore, as poor emotional skills are highly correlated to psychological distress [30] because of poor emotional regulation, the systematic screening of patient distress with ultra-brief screening tools [31] could be another efficient way to detect patients with poor emotional skills.**

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## References

- [1] M. Hojat, *Empathy in patient care: antecedents, development, measurement, and outcomes*, Springer, New York, 2007.
- [2] S. Lelorain, A. Brédart, S. Dolbeault, S. Sultan, A systematic review of the associations between empathy measures and patient outcomes in cancer care, *Psychooncology*. 21 (2012) 1255–1264. doi:10.1002/pon.2115.
- [3] S. Brasseur, J. Grégoire, R. Bourdu, M. Mikolajczak, The Profile of Emotional Competence (PEC): development and validation of a self-reported measure that fits dimensions of emotional competence theory, *Plos One*. 8 (2013) e62635–e62635. doi:10.1371/journal.pone.0062635.
- [4] R. Tamagawa, S. Garland, M. Vaska, L. Carlson, Who benefits from psychosocial interventions in oncology? A systematic review of psychological moderators of treatment outcome, *J. Behav. Med.* 35 (2012) 658–673. doi:10.1007/s10865-012-9398-0.
- [5] G.D. Bodie, B.R. Burleson, A.J. Holmstrom, J.D. McCullough, J.J. Rack, L.K. Hanasono, J.G. Rosier, Effects of Cognitive Complexity and Emotional Upset on Processing Supportive Messages: Two Tests of a Dual-Process Theory of Supportive Communication Outcomes, *Hum. Commun. Res.* 37 (2011) 350–376. doi:10.1111/j.1468-2958.2011.01405.x.
- [6] B. Lakey, E. Orehek, Relational regulation theory: A new approach to explain the link between perceived social support and mental health, *Psychol. Rev.* 118 (2011) 482–495. doi:10.1037/a0023477.
- [7] W. Yoo, K. Namkoong, M. Choi, D.V. Shah, S. Tsang, Y. Hong, M. Aguilar, D.H. Gustafson, Giving and receiving emotional support online: Communication competence as a moderator of psychosocial benefits for women with breast cancer, *Comput. Hum. Behav.* 30 (2014) 13–22. doi:10.1016/j.chb.2013.07.024.
- [8] M. Quirk, K. Mazor, H. Haley, M. Philbin, M. Fischer, K. Sullivan, D. Hatem, How patients perceive a doctor’s caring attitude, *Patient Educ. Couns.* 72 (2008) 359–366. doi:10.1016/j.pec.2008.05.022.
- [9] T. Takayama, Y. Yamazaki, N. Katsumata, Relationship between outpatients’ perceptions of physicians’ communication styles and patients’ anxiety levels in a Japanese oncology setting., *Soc. Sci. Med.* 53 (2001) 1335–1350.
- [10] D. Yagil, M. Shnapper-Cohen, When authenticity matters most: Physicians’ regulation of emotional display and patient satisfaction, *Patient Educ. Couns.* 99 (2016) 1694–1698. doi:10.1016/j.pec.2016.04.003.
- [11] L. Korsvold, A.V. Mellblom, H.C. Lie, E. Ruud, J.H. Loge, A. Finset, Patient-provider communication about the emotional cues and concerns of adolescent and young adult patients and their family members when receiving a diagnosis of cancer, *Patient Educ. Couns.* 99 (2016) 1576–1583. doi:10.1016/j.pec.2016.03.028.
- [12] Y. Zhou, G. Humphris, N. Ghazali, S. Friderichs, D. Grosset, S.N. Rogers, How head and neck consultants manage patients’ emotional distress during cancer follow-up consultations: a multilevel study, *Eur. Arch. Otorhinolaryngol.* 272 (2015) 2473. doi:10.1007/s00405-014-3209-x.
- [13] J. Cohen, *Statistical power analysis for the behavioral sciences*, 2nd ed., Lawrence Erlbaum Associates, Hillsdale, NJ, 1988.
- [14] S.W. Mercer, M. Maxwell, D. Heaney, G.C.M. Watt, The consultation and relational empathy (CARE) measure: Development and preliminary validation and reliability of an empathy-based consultation process measure., *Fam. Pract.* 21 (2004) 699–705. doi:10.1093/fampra/cmh621.
- [15] M. Wirtz, M. Boecker, T. Forkmann, M. Neumann, Evaluation of the “Consultation and Relational Empathy” (CARE) measure by means of Rasch-analysis at the example of cancer patients, *Patient Educ. Couns.* 82 (2011) 298–306.

- [16] T. Conroy, M. Mercier, J. Bonnetterre, E. Luporsi, J.L. Lefebvre, M. Lapeyre, M. Puyraveau, S. Schraub, French version of FACT-G: validation and comparison with other cancer-specific instruments, *Eur. J. Cancer.* 40 (2004) 2243–2252. doi:10.1016/j.ejca.2004.06.010.
- [17] N. Costet, V. Lapierre, E. Benhamou, C. Le Galès, Reliability and validity of the Functional Assessment of Cancer Therapy General (FACT-G) in French cancer patients, *Qual. Life Res.* 14 (2005) 1427–1432. doi:10.1007/s11136-004-5531-z.
- [18] M. Mikolajczak, H. Avalosse, S. Vancorenland, R. Verniest, M. Callens, N. van Broeck, C. Fantini-Hauwel, A. Mierop, A nationally representative study of emotional competence and health, *Emotion.* 15 (2015) 653–667. doi:10.1037/emo0000034.
- [19] D. Nelis, I. Kotsou, J. Quidbach, M. Hansenne, F. Weytens, P. Dupuis, M. Mikolajczak, Increasing emotional competence improves psychological and physical well-being, social relationships, and employability, *Emotion.* 11 (2011) 354–366. doi:10.1037/a0021554.
- [20] L. Rey, N. Extremera, L. Trillo, Exploring the relationship between emotional intelligence and health-related quality of life in patients with cancer, *J. Psychosoc. Oncol.* 31 (2013) 51–64. doi:10.1080/07347332.2012.703770.
- [21] K. Vytal, B. Cornwell, N. Arkin, C. Grillon, Describing the interplay between anxiety and cognition: From impaired performance under low cognitive load to reduced anxiety under high load., *Psychophysiology.* 49 (2012) 842.
- [22] K.E. Vytal, B.R. Cornwell, A.M. Letkiewicz, N.E. Arkin, C. Grillon, The complex interaction between anxiety and cognition: Insight from spatial and verbal working memory., *Front. Hum. Neurosci.* 7 (2013). doi:10.3389/fnhum.2013.00093.
- [23] S. Iida, T. Nakao, H. Ohira, Implicit attenuation of subsequent emotion by cognitive activity., *Cogn. Affect. Behav. Neurosci.* 11 (2011) 476–476–484. doi:10.3758/s13415-011-0045-y.
- [24] K.E. Vytal, N.E. Arkin, C. Overstreet, L. Lieberman, C. Grillon, Induced-anxiety differentially disrupts working memory in generalized anxiety disorder., *BMC Psychiatry.* 16 (2016). <http://search.ebscohost.com/login.aspx?direct=true&db=psych&AN=2016-13367-001&site=eds-live> (accessed January 3, 2018).
- [25] A. Powers, D. Cross, N. Fani, B. Bradley, PTSD, emotion dysregulation, and dissociative symptoms in a highly traumatized sample, *J. Psychiatr. Res.* 61 (2015) 174–179. doi:10.1016/j.jpsychires.2014.12.011.
- [26] D. Nelis, J. Quidbach, M. Mikolajczak, M. Hansenne, Increasing emotional intelligence: (How) is it possible?, *Individ Differ.* 47 (2009) 36–41.
- [27] I. Kotsou, D. Nelis, J. Grégoire, M. Mikolajczak, Emotional plasticity: Conditions and effects of improving emotional competence in adulthood, *J. Appl. Psychol.* 96 (2011) 827–839. doi:10.1037/a0023047.
- [28] J.M. Smyth, D. Arigo, Recent evidence supports emotion-regulation interventions for improving health in at-risk and clinical populations, *Curr. Opin. Psychiatry.* 22 (2009) 205–210. doi:10.1097/YCO.0b013e3283252d6d.
- [29] E. Teding van Berkhout, J.M. Malouff, The Efficacy of Empathy Training: A Meta-Analysis of Randomized Controlled Trials, *J. Couns. Psychol.* 63 (2016) 32–41. doi:10.1037/cou0000093.
- [30] A.P. Beath, M.P. Jones, J. Fitness, Predicting distress via emotion regulation and coping: Measurement variance in trait EI scales, *Personal. Individ. Differ.* 84 (2015) 45–51. doi:10.1016/j.paid.2014.12.015.
- [31] D.A. Ryan, P. Gallagher, S. Wright, E.M. Cassidy, Sensitivity and specificity of the Distress Thermometer and a two-item depression screen (Patient Health Questionnaire-2) with a “help” question for psychological distress and psychiatric morbidity in patients with advanced cancer, *Psychooncology.* 21 (2012) 1275–1284. doi:10.1002/pon.2042.

Table 1. Sample characteristics

	% or mean (standard deviation) [sample range]
<b>Physicians (N=22)</b>	
French (%)	64
German	36
Male (%)	59
Age	39.7 (8) [32-57]
Medical specialty (%)	
Medical oncology	82
Other	18
<b>Patients (N=296)</b>	
French (%)	82
German	18
Male (%)	65
Age	63 (10) [25-85]
Live with someone (%)	81
Education (%)	
High school diploma or less	69
Bachelor's degree	19
More than bachelor's degree	12
Perceived financial situation (%)	
Rather difficult	14
Correct	53
Comfortable	33
Professional situation (%)	
Retired	65
Employed	26
Unemployed	9
Time since cancer diagnosis (months)	25 (23) [1-169]
Cancer type (%)	
Thoracic	63.5
Digestive tract	36.5
Cancer stage at diagnosis (%)	
I	18
II	17
III	13
IV	26
Missing data	26
Current metastasis (%)	
Yes	37
No	59
Missing data	4
Type of consultation (%)	
Follow-up	60
Bad news	40
Treatment goal (%)	
Active, against the tumor	38
Palliative	31
Follow-up monitoring	31

Current treatment (%)	
Chemotherapy	41
Radiotherapy	4
Patient-reported physician empathy	42.8 (7.2) [20-50]
<b>Emotional</b> quality of life*	8.1 (5.1) [0-24]
Emotional skills	
Identification of emotions	3.6 (0.7) [1.4-5]
Understanding-expression-regulation of emotions	3.2 (0.8) [1-5]

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\* Higher scores represent a *worse* patient **emotional** quality of life

Table 2. Multiple regression to explain ~~the deterioration in~~ patient emotional quality of life.

	Coefficients	Standard Error	<i>t</i>	<i>p</i>
Constant				
Sex	0.19	0.64	0.30	0.76
Age	0.02	0.03	0.66	0.50
Live with someone	-0.77	0.79	-0.97	0.33
Education	-0.25	0.38	-0.67	0.50
Financial situation	-0.30	0.42	-0.71	0.48
Professional situation: unemployed <sup>a</sup>	2.12*	1.23	1.73	0.08
Professional situation: employed <sup>a</sup>	2.39***	0.87	2.76	0.006
Type of cancer: digestive	-1.52	1.02	-1.49	0.14
Time since diagnosis	0.00	0.00	0.54	0.59
Metastases	0.19	0.68	0.28	0.78
Chemotherapy	-0.57	0.78	-0.73	0.47
Radiotherapy	0.66	1.61	0.40	0.68
Aim of treatment: palliative <sup>b</sup>	1.67*	0.90	1.86	0.07
Aim of treatment: follow-up <sup>b</sup>	-1.31	1.10	-1.19	0.24
Type of consultation: follow-up	-38.08**	16.69	-2.28	0.02
Empathy	-0.52**	0.24	-2.17	0.03
Patient's emotional skills to understand, express and regulate emotions	-6.65**	3.38	-1.97	0.05
Empathy*Patient emotional skills	0.11	0.07	1.42	0.16
Empathy*Type of consultation	0.93**	0.38	2.45	0.01
Type of consultation*Patient emotional skills	11.44**	5.22	2.19	0.03
Type of consultation*Patient emotional skills*Empathy	-0.28**	0.12	-2.36	0.02

Note: N = 263 due to missing data. ~~As the dependent variable is the deterioration in patient emotional quality of life (QoL), a positive coefficient means more deterioration whereas a negative coefficient means less deterioration in QoL.~~ As emotional quality of life (eQoL) is better for low scores, a positive coefficient of regression means a *worse* eQoL whereas a negative coefficient means a *better* eQoL.

$F(21, 241) = 3.8, p < .001, R^2 = 25\%$ . The 3-way interaction was responsible for a 2% increase in  $R^2$

<sup>a</sup> Professional situation was coded with dummy coding, the reference category being "retired"

<sup>b</sup> Aim of treatment was also dummy coded, the reference category being "active treatment against the tumor"

\* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < 0.01$ .

Table 3. Conditional effect of empathy on patient **eQoL** at values of patient emotional skills and according to the type of consultation

Type of consultation	Level of patient emotional skills	Effect	Standard error	<i>t</i>	<i>p</i>	Low 95% CI	High 95% CI
Follow-up	2.41 (low skills)	-0.26	0.08	-3.29	0.001	-.42	-.11
Follow-up	3.21 (average skills)	-0.19	0.05	-3.31	0.001	-.30	-.08
Follow-up	3.71 (Johnson-Neyman value)	-0.15	0.07	-1.98	0.05	-.28	.00
Follow-up	4.00 (high skills)	-0.11	0.09	-1.32	0.19	-.29	.06
Bad news	2.48 (low skills)	-0.02	0.09	-0.19	0.85	-.19	.16
Bad news	3.22 (average skills)	-0.12	0.06	-1.89	0.06	-.25	.01
Bad news	3.27 (Johnson-Neyman value)	-0.13	0.07	-1.99	0.05	-.26	.00
Bad news	3.96 (high skills)	-0.23	0.10	-2.35	0.02	-.42	-.04

Note: values for the level of patient emotional skills are the mean and plus/minus one standard deviation from the mean (average, high and low skills) and the "Johnson-Neyman" values at which the effect of empathy on **eQoL** transitions between statistical significance and non-significance at  $p \leq .05$ .



Figure 1

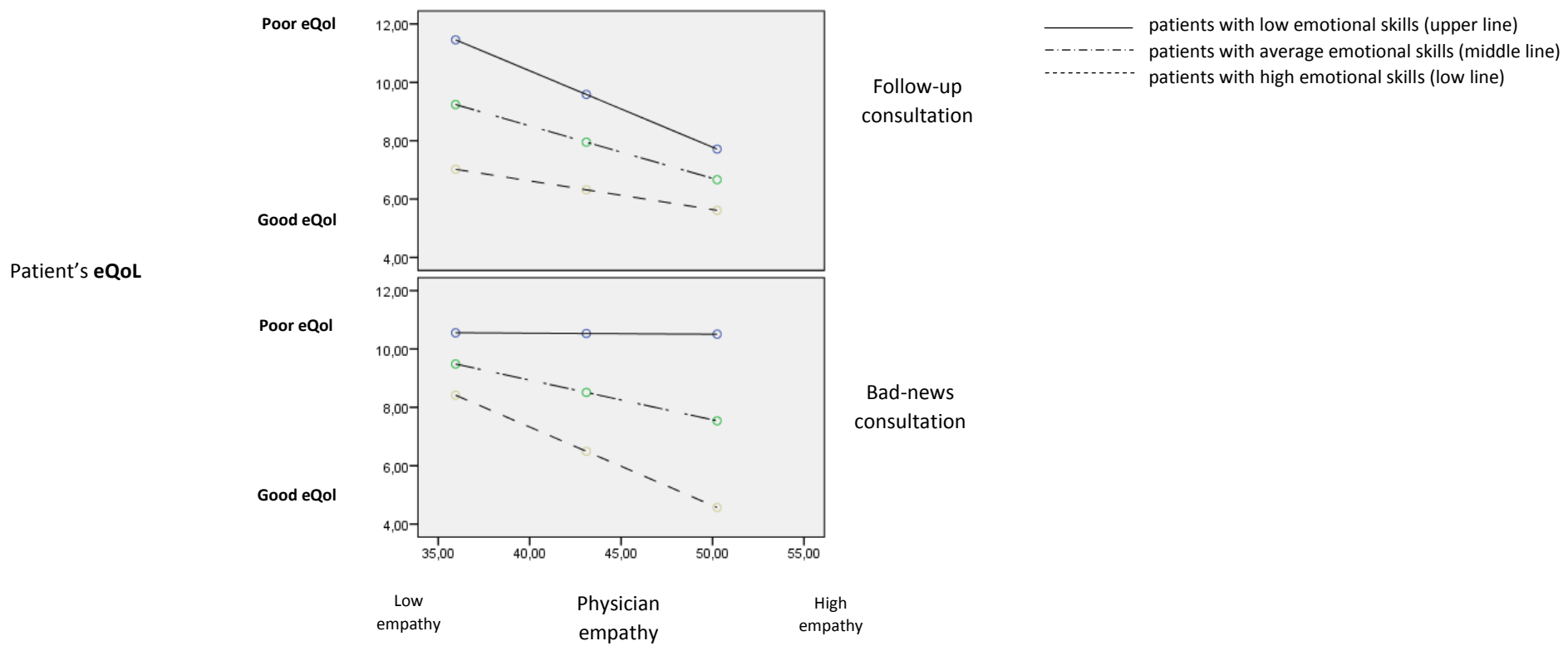


Figure 1. Interaction plot of physician empathy, patient emotional skills (understanding, expression and regulation of emotions) and type of consultation. Patient emotional skills are plotted using mean  $\pm$  one standard deviation. **eQoL = emotional quality of life.**