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TITLE

Physicians' emotion regulation during communication with advanced cancer patients

RUNNING HEAD: Physicians' emotion regulation in cancer care

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ABSTRACT

OBJECTIVE In cancer care optimal communication between patients and their physicians is, among other things, dependent on physicians' emotion regulation which might be related to physicians' as well as patients' characteristics. In this study we investigated physicians' emotion regulation during communication with advanced cancer patients, in relation to physicians' (stress, training, alexithymia) and patients' (sadness, anxiety, alexithymia) characteristics.

METHODS In this study, 134 real-life consultations between 24 physicians and their patients were audio-recorded and transcribed. The consultations were coded with the "Defence Mechanisms Rating Scale – Clinician". Physicians completed questionnaires about stress, experience, training and alexithymia, while patients completed questionnaires about sadness, anxiety and alexithymia. Data were analysed using linear mixed effect models.

RESULTS Physicians used several defence mechanisms when communicating with their patients. Overall Defensive Functioning was negatively related to physicians' alexithymia. The number of defence mechanisms used was positively related to physicians' stress and alexithymia as well as to patients' sadness and anxiety. Neither physicians' experience and training nor patients' alexithymia were related to the way physicians regulated their emotions.

CONCLUSIONS This study showed that physicians' emotion regulation is related to both physician (stress and alexithymia) and patient characteristics (sadness and anxiety). The study also generated several hypotheses on how physicians' emotion regulation relates to contextual variables during health care communication in cancer care.

INTRODUCTION

In cancer care, theories and protocols related to communication have been developed, and numerous communication skills trainings (CST) and workshops have been proposed to physicians worldwide, even on a mandatory basis [1]. However, a paradigm shift has occurred in which the initial enthusiasm for the acquisition of *standardised* communication skills by physicians is tempered by critical comments. These criticisms include a lack of consideration for the subjectivity and context-dependent nature of communication, in particular with regard to the importance of physicians' characteristics such as their flexibility, experiences and resources [2-4]. In order to move beyond a one-size-fits-all skills-based model, we investigated the relationships between a physicians' functioning (emotion regulation by use of defence mechanisms), his/her subjectivity (physicians' characteristics and states) and the context in which it occurred (patients' characteristics and states) during communication with patients suffering from advanced cancer. To the best of our knowledge, no other study has ever investigated how the physicians' defensive functioning is related to physicians' and patients' characteristics in cancer care communication.

Physicians' emotion regulation

Defence mechanisms – self-protective psychological mechanisms triggered by an affective load– can be understood as a form of implicit emotion regulation [5]. As we reported previously [6], defences are supposed to help a person adapt to and/or protect oneself from stress [7]. Moreover, defences have been proposed as a way to conceptualise the emotional distance or connection a physician establishes with patients [8]. Various types of defence mechanisms have been identified [9] and classified depending on their degree of adaptation to or distortion of reality. These range from “immature defences” (i.e., keeping distance by distorting reality and/or emotions, being closed to further exploration) to “mature” (i.e., keeping in touch with own and others feelings, being open to explore further), see box 1 in the supplemental material for more examples and further information.

With the Defence Mechanism Rating Scale for clinicians (DMRS-C) [10], a single Overall Defensive Functioning score (ODF) can be calculated (1-7). Number of defences used is also calculated, as are scores for number of only mature versus only immature defences used.

In previous studies, we found a high prevalence of defence mechanisms among physicians when communicating with simulated and real patients. We also found a relationship between physicians' defence mechanisms and patients' outcomes in cancer care, as well as with physicians' learning skills [6, 11, 12]. Based on these studies, hypotheses were formulated about the physician-related and patient-related factors that might generate or influence the use of defence mechanisms by physicians.

Physician-related factors

Several physician characteristics could affect physician-patient communication [13], and the following of these are included in this study: perceived level of stress, years of experience in oncology, received training in communication skills, and alexithymia traits (i.e., cognitive-affective difficulties with emotional processing and/or awareness).

Physicians' stress might impair their empathy during communication [14, 15] and their clinical reasoning [16]. Physicians report a greater likelihood of suboptimal patient care when stressed [17]. Divergent results have been reported regarding the possible relationship between physicians' experience and treatment outcomes or communication [13, 18, 19], however a positive association has been found between the effect of CST on communication skills and defensive functioning [11, 12].

Alexithymia was included to assess difficulties with emotional processing and/or awareness. Alexithymia is a multidimensional concept characterised by cognitive-affective deficits consisting of the following: i) difficulties in identifying and describing emotions, ii) difficulties in distinguishing between emotions and physical sensations of emotional arousal, iii) reduced imaginative processes and a lack of fantasy, and iv) an externally oriented cognitive style (operational thinking) [20]. Physicians' alexithymia has been related to burnout [18], and patients' alexithymia has been related to quality of life, to higher levels of depression, anxiety, stress [21] and somatisation [22].

Patient-related factors

In addition to alexithymia, we included sadness and anxiety as well as age and gender. The last two variables were used as control variables. Regarding patients' sadness and anxiety, research has shown that physicians tend to more frequently give empathetic responses to patients' expressions of sadness than to patients' expressions of fear. However, physicians tend to provide more in-depth empathetic responses to fear than to sadness [23]. Patient anxiety has been shown to decrease when physicians show affective communication [24] and

when physicians have been trained to recognise and manage their own emotional reactions in their relationships with patients [25].

To summarise, the research question addressed in this paper is whether physicians' stress, training, experience, and alexithymia, and patients' sadness, anxiety, and alexithymia are related to physicians' use of defence mechanisms during patient-physician communication in cancer care. The goal is to generate new hypotheses to increase the quality of research and/or training in order to move from *standardized* to more *flexible* communication in cancer care.

MATERIALS AND METHODS

The study was designed as a naturalistic multi-centred observational study of physicians meeting patients with advanced cancer to discuss test results. Permission for the study was granted by the medical ethical committees of the participating hospitals. All participating patients and physicians provided written informed consent.

Sample

All physicians (N=49) who worked in an ambulatory oncology department of three hospitals in Switzerland and receiving patients for medical consultations were invited to participate in this study. Reasons for physicians not to participate included time pressure, imminent departure to other services and a lack of patients in the palliative phase. The participating physicians (N=24; response rate 49%) informed the researcher (MdV) which patients were eligible for inclusion. Inclusion criteria of patients were the following: the patient i) followed ambulant treatment for advanced cancer, ii) was aware of the diagnosis of advanced cancer, iii) was 18 years or older, iv) spoke French, and v) visited the physician to be informed about the results of tests, such as computed tomography (CT) scans, histopathological examinations, magnetic resonance imaging (MRIs) or tumour marker levels, which might indicate cancer progression. Exclusion criteria were severe psychiatric, cognitive disorders, or communication impairment.

The patients were sent information about the study in a letter to their home and were approached by the researcher before their next meeting with a participating physician.

A total of 134 patients (response rate 53%; 255 patients invited) were included. The reasons for patients' non-participation included tiredness, other appointments, a lack of time to complete the questionnaires, a lack of interest and feeling ill. The patients were all aware of their diagnosis of advanced cancer and were undergoing active anticancer or palliative treatment. A subsample of the physicians and patients also filled in the alexithymia measure (n=16 and n=85 respectively).

Procedure

The physicians completed a demographic questionnaire. They then completed the perceived stress questionnaire after each consultation. The patients completed all questionnaires after the consultation, including a retrospective measurement of their state of sadness prior to the consultation. The entire consultations were audio-recorded and were afterwards transcribed.

Measurements

Defence mechanisms. The Defence Mechanism Rating Scale for clinicians (DMRS-C) [10] is an observer-rated instrument developed to assess physicians' defence mechanisms. Based on the transcriptions of the consultations, 30 defences were coded, total number of defences and number of mature and immature defences were calculated, as well as an Overall Defensive Functioning (ODF) score ranging from one (lowest or most immature defensive functioning) to seven (highest or most mature defensive functioning). In a critical review of the psychometric characteristics of different measures of defense mechanisms, the Defence Mechanism Rating Scale was found to have a good validity (discriminant, convergent, construct, and concurrent) and reproducibility [26-28]. Detailed information on the development of the DMRS-C and its psychometric qualities as well as on the process of coding defences for this study are reported elsewhere [6, 10]. The first author of this manuscript coded all the consultations. Consensus ratings and reliability assessments were conducted using a random sample of 22% (N=33) of the consultations with another experienced DMRS-C coder. Interrater reliability using the two-way mixed effects model of consistency and single-measure statistics was considered to be good, with an Intraclass Correlation Coefficient (ICC) of 0.70.

Physicians' stress. Physicians reported their level of stress directly after the consultation on a Visual Analogue Scale (0=no stress to 10=very stressed). The construct validity and sensitivity of the VAS to measure stress have been found to be satisfactory [29].

Physicians' experience. Physicians reported their years of experience in medicine and in oncology by completing a questionnaire (“I have ___ years of experience in medicine” and “I have ___ years of experience in oncology”).

Physicians' training. Whether physicians had attended a communication skills training was measured by asking, “Have you received the Communication Skills Training from the Swiss Cancer League?” and “Please state all other relevant training that you have received outside of the standard medical training”.

Patients' sadness. Patients' sadness was measured on a Visual Analogue Scale (“not at all” to “completely”) by asking the question, “During the past 2 weeks, to what extent have you felt sad?” (score 0 to 70). The higher the score, the more often the patient had felt sad in the prior weeks. Visual Analogue Scales have been found to have good validity and reliability and to be a valuable tool in measuring mood [29, 30].

Patients' anxiety. To measure patients' anxiety, the patients completed the state part of the State-Trait Anxiety Inventory (STAI-Y-A) following the consultation (score 20-80). This instrument has good internal consistency and reliability [31].

Physicians' and patients' alexithymia. Physicians' and patients' alexithymia were measured with the Toronto Alexithymia Scale (TAS-20) [32], a self-report scale rated on a 5-point Likert scale that measures three factors of alexithymia: 1) difficulty in identifying feelings (DIF), 2) difficulty in describing feelings to others (DDF), and 3) externally oriented thoughts (EOT). Eventhough the TAS-20 has some limitations, especially with the subscale EOT, it has been found to be one of the most generally empirically sound measures of alexithymia [33] and has been translated into French [34]. This questionnaire was added to the study protocol in a later phase and was thus not completed by all participating physicians and patients. Analyses based on this subsample of our data are clearly identified as such in the text. Cut-of scores for the French version of the TAS-20 have been found to be different from the English version [35]: alexithymia ≥ 56 , non-alexithymia ≤ 44 .

Data analyses

Data were explored by descriptive statistics and graphical means. The hierarchical structure of the data, due to treatment of several patients by the same physician, implies the use of models capable of taking inter-correlations among observations into account. Thus the associations between the independent variables (physician and patient characteristics) and the dependent variables (Overall Defensive Functioning (ODF), number of defences used, number of mature and immature defences) were investigated in two series of linear mixed

effect models, adjusted for inter-correlation among observations by including a common random intercept for observations corresponding to the same physician. The inclusion of a common random intercept for observations corresponding to the same clinician in all models was also supported by Akaike Information Criterion (AIC) in most models [36].

The explained variability of each response variable in the basic linear mixed effect model (adjusted for age and gender only), explained by the effect of clinician varies between 4% and 23% (high defences: 4%; ODF: 9%; total number of defences: 20%; and low defences: 23%), which may suggest that in some models the inclusion of the random intercept does not explain a lot of variability, but for the sake of homogeneity and based on the observed AIC for each model, we adjusted all models for the intra-correlation by the mentioned random intercept.

For each dependent variable two linear mixed effect models were adjusted: i) the first series described the association between each independent variable alone and each dependent variable (for example first ODF and Alexithymia alone, then ODF and stress alone etc.), and ii) the second series described the association of all the significantly associated independent variables from the first series put together with each dependent variable (for example number of defences with stress, sadness and anxiety). All models were adjusted for age and gender of the patient, as the goal was to generate hypotheses that would have clinical meaning for physicians independently of their patient's age and gender. Quality of the fit for adjusted models was investigated using inferential and graphical means (e.g., normal QQ-plots for residuals), for all models the fit quality proved to be satisfactory. It should be mentioned here that normal distribution for the response variable is not necessary while fitting linear models as normal distribution is required to be verified only for residuals and random effects, and not on the response variable. Finally, although we adjusted several models to describe the two dependent variables, no multiple comparisons were performed between the dependent variables as the main goal was to describe each dependent variable separately. All statistical analyses were performed using SPSS Statistics 21 software. Level of significance for all p-values was fixed at .05.

RESULTS

Sample

A total of 134 patients participated in this study (50% women and 50% men), with a mean age of 60 years (range 27-86). A total of 24 physicians (54.2% women and 45.8% men) participated in the study, with a mean age of 39 years (range 28-61). Within the study, the physicians met 6 patients on average (range= 1-10). The physicians' gender, age and experience in oncology did not differ significantly between the hospitals. A summary of the descriptive statistics of physicians and patients is shown in Table 1.

-INSERT TABLE 1-

Descriptive statistics

The physicians showed a mean of 15.8 (SD=6.74, range 4-35) defence mechanisms per consultation. The mean Overall Defensive Functioning (ODF) was 4.23 (SD=0.56, range 2.85-5.73). The most prevalent defensive level was the immature defence level; the mature defence level was rare (see Table 1).

Physicians reported a mean stress level of 3.1 (SD=2.0, range 0-8.4). They had a mean of 6.6 years of experience in oncology (range 0-29), and seven of the 24 physicians (29%) had attended Communication Skills Training. Sixteen physicians (who saw 85 of the 134 patients) completed the TAS-20, with a mean score of 39.2 (SD=10.2, range 24-56). Ten physicians had a score indicating the absence of alexithymia, five had scores in the possible alexithymia range and one had a score indicating probable alexithymia.

Patients reported a mean sadness level prior to the consultation of 23.4 (SD=17, range 0-65) and a mean anxiety level after the consultation of 35.6 (SD=12.4, range 20-74). Of the 134 patients, 44 completed the TAS-20, with a mean of 50.8 (SD=13.3, range 28-75). Fifteen patients scored well below the threshold for alexithymia, 13 had scores indicating possible alexithymia, and 16 scored highly alexithymic.

Analysis of Models

Significant results of the first and second series of linear mixed effect models are presented in Tables 2 and 3.

Overall Defensive Functioning and number of defences used

In the first series of models (only one independent variable per model), the Overall Defensive Functioning of the physician was negatively related to physicians' total alexithymia (subsample) and, in particular, to difficulty identifying feelings and externally oriented thoughts (see Table 2 for details). The number of defences used was positively related to the difficulty identifying feelings subscale of physicians' alexithymia (subsample), physicians' stress, patients' sadness and patients' anxiety (whole sample). In the second series of models (with the dependent variable and all the significantly associated independent variables from the first series), the four variables related to number of defences were put together in the same model resulting in only physicians' stress and patients' sadness remaining significantly and independently related with the number of defences (stress: $\beta=1.10$, $p=.001$; sadness: $\beta=0.10$, $p=.017$; DIF: $\beta=0.55$, $p=.057$; anxiety: $\beta=-0.04$, $p=.46$, subsample) (see Table 3).

Number of immature and mature defences used

In the first series of models, the number of immature defences was positively related to the difficulty identifying feelings subscale of alexithymia (subsample), to physicians' stress and to patients' sadness (whole sample, see Table 2 for details). In the second series of models all variables remained significantly positively and independently related with the number of immature defences (stress $\beta=.60$, $p=.014$; difficulty identifying feelings $\beta=.48$, $p=.020$; sadness $\beta=.08$, $p=.008$, subsample) (see Table 3).

Finally, patients' anxiety was significantly positively related to the number of mature defences ($\beta=.02$, $p=.009$, whole sample) (see Table 2). For a graphic summary of the relationships between the physicians' and patients' characteristics with the physicians' regulation of emotions, see Figure 1.

DISCUSSION

In this study, we found that physicians use several defence mechanisms to regulate their emotions when communicating with advanced cancer patients. Their defensive functioning and use of defence mechanisms are related to physician and patient characteristics, thus illustrating the context-dependent nature of physicians' emotion regulation.

Overall Defensive Functioning is negatively related to physicians' alexithymia, particularly to difficulty identifying feelings and an externally oriented thinking style. Thus, the more difficulties a physician has with emotional processing, the less mature the physician's overall defensive style is. This is an interesting finding because Overall Defensive Functioning was not related to any of the other physician or patient characteristics, such as the state of the patient and the training or stress of the physician. It is possible that alexithymia can be considered a form of emotional detachment that serves a global defensive function. In difficult situations in which one has limited control over the events, it might be adaptive to distance oneself from hurtful emotions that might otherwise be overwhelming. However, when this emotional detachment is no longer situational but becomes structural for a physician, the alexithymic functioning might hamper the therapeutic relationship with patients by producing a lack of connection and a sense of interchangeability (i.e., that either the patient or the physician could be replaced by any other patient/physician without being missed)[37], which might alienate and isolate the patient. Additionally, for the physician, this lack of connection and sense of interchangeability might become the precipitating symptoms of feelings of burnout as depersonalization is one of the symptoms of burnout [18, 38].

The number of defences used by physicians is positively related to physicians' stress and patients' sadness, and this independently of each other. Thus, although the defensive functioning of the physician might remain at the same level across different contexts, the frequency of defences might increase or decrease depending on the context (patient sadness) and inner state of the physician (stress).

With respect to the frequencies of immature or mature defence mechanisms, differences are apparent in their relation to contextual factors. While there is an absence of any relation with physician variables for mature defences, immature defences are related to physicians' stress and difficulty in identifying feelings. This result supports the hypothesis that physicians with a more mature defensive functioning might be more independent of (inner) context and may

maintain the ability to keep a relationship with patients throughout different stress levels, and thus fulfil a critical element of good patient care [39].

With regard to the prevalence of alexithymia in our sample, our results are partly in accordance with the literature [18], but it is possible that we failed to include the more highly alexithymic physicians. Patients scored higher on alexithymia than physicians, with 36.4% of patients showing probable alexithymia scores. These results also seem to be consistent with the literature that reports a prevalence of alexithymia between 26% and 42.5% in cancer patients compared to between 2.4% and 12.85% in individuals without cancer [22, 40].

Study limitations

Several limitations of the study must be considered. First, it is not possible to infer causal interpretations from this study as it is not a longitudinal study. Although we evaluated the context-dependent nature of physicians' emotion regulation, we limited this to patients' and physicians' characteristics and did not consider for instance the institutional or societal context. Furthermore, although the DMRS-C is a validated and reliable instrument, there is room for improvement in measuring defence mechanisms during communication, for example by continuing to strive for higher ICC-scores between coders. The occurrence of mature defences was relatively rare and the hypotheses connected to their occurrence should thus be verified before further interpretation. Also, one of our measurements (TAS-20) was added in a later stage of the study limiting the number of observations for this variable. Therefore we need to be cautious with the interpretation of the results, even more so since measurement of alexithymia should ideally be done by using multiple measurements. Finally, as one of the coders was also part of the research team, unwitting contamination of findings might have occurred. However, as the hypotheses resulting of this particular study were not known at the time of coding, and the second coder was in no way implicated in the study, we feel confident that contamination has been minimal.

Future research and clinical implications

Our study generated hypotheses that might be studied in future research to enhance clinical practice, training and supervision:

- 1) Overall Defensive Functioning might be predominantly a stable trait;
- 2) The number of defences used might depend on the physician's outer world (the patient's state) and inner world (the level of stress);
- 3) Physicians who use more mature defences might function more independently from their inner world than physicians who use more immature defences;
- 4) Alexithymia might be viewed as a form of emotional detachment that serves a global defensive function. When a physician is detached from his or her emotions, he or she might fail to recognise them and thus lack the ability to manage them in a mature way.

Future research should investigate which aspects of the inner and outer worlds of physicians represent difficulties or strengths for the physician-patient relationship and how this might influence their communication and health status. Qualitative studies might further enrich our hypotheses on this matter. Studies that include a larger sample of various physicians and patients as well as a longitudinal perspective might provide more conclusive answers on the questions raised in this paper. Answers to these questions will improve both training and clinical practice in the future by allowing it to move away from a one-size-fits-all skills based paradigm of clinical communication and move towards a paradigm taking into account the individual aspects of health care communication, in the hopes of improving communication by ameliorating the quality of the physicians' judgement and deliberate actions.

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Table 1. Descriptive statistics and characteristics of the physicians and patients.

	Physicians N=24		Patients N=134	
	Number	Percentage	Number	Percentage
Women	13	54.2%	66	50%
Attended CST	6	25%		
<i>Cancer diagnosis</i>				
Intestinal			30	22.4%
Breast			19	14.2%
Lung			14	10.4%
Prostate			3	2.2%
Other			61	45.5%
Missing			7	5.2%
	Mean	S.D. (range)	Mean	S.D. (range)
Age	39.0	8.8 (28-61)	59.7	13.0(27-86)
Experience in years	6.6	8.1 (0-29)		
Overall Defensive Functioning	4.2	0.6 (2.9-5.7)		
Number of defence mechanisms	15.8	6.7 (4-35)		
Immature defences	8.5	4.9 (0-28)		
Intermediate defences	6.6	3.0 (1-14)		
Mature defences	0.7	1.1 (0-6)		
Stress	3.1	2.0 (0-8.4)		
Sadness			23.4	17 (0-65)
Anxiety			35.6	12.4 (20-74)
	Physicians N=16		Patients N=85	
	Mean	S.D. (range)	Mean	S.D. (range)
Alexithymia, TAS-Total	39.2	10.2 (24-56)	50.8	13.3 (28-75)
Alexithymia, DIF	12.7	3.8 (7-20)	15.8	6.5 (7-30)
Alexithymia, DDF	11.1	3.8 (5-17)	13.8	4.2 (6-23)
Alexithymia, EOT	15.4	4.2 (8-22)	21.2	6.0 (10-37)

Abbreviations: CST, Communication Skills Training; DIF, difficulty identifying feelings;

DDF, difficulty describing feelings to others; EOT, externally oriented thoughts.

Table 2. First series of linear mixed effect models (only one independent variable per model), relations between physician and patient variables and physicians' defences, adjusted for patient age and gender.

		Physician Alexithymia ¹	Physician DIF ¹	Physician EOT ¹	Physician stress ²	Patient sadness ²	Patient anxiety ²
Overall	β	-0.02 [□]	-0.05 [□]	-0.04*			
Defensive	<i>p</i>	.005	.002	.036	ns	ns	ns
Functioning	confounders	ns	ns	ns			
Number of defences	β		0.62*		1.12 [□]	0.09 [□]	0.13 [□]
	<i>p</i>	ns	.023	ns	.000	.009	.006
	confounders		ns		ns	ns	ns
Mature defences	β						0.02 [□]
	<i>p</i>	ns	ns	ns	ns	ns	.009
	confounders						ns
Immature defences	β		0.55 [□]		0.67 [□]	0.06 [□]	
	<i>p</i>	ns	.007	ns	.003	.008	ns
	confounders		ns		ns	ns	

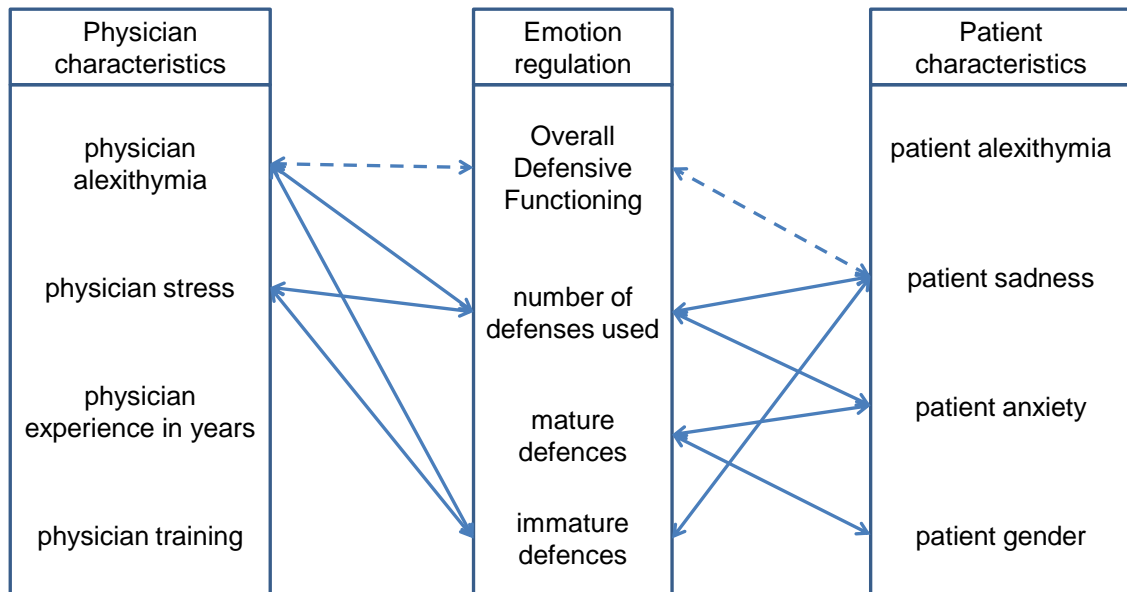
Abbreviations: DIF, Difficulty identifying feelings; EOT, Externally Oriented Thinking; ns, nonsignificant; * $p < .05$, [□] $p < .01$; ¹analyses on subsample (n=85), ²analyses on whole sample (n=134). Confounders are the patient age and gender.

Table 3. Second series of linear mixed effect models (all presented independent variables together in each model), relation between physician and patient variables and physicians' defences, adjusted for patient age and gender.

		Physician DIF	Physician stress	Patient sadness	Patient anxiety	Patient age and gender
Number of defences	β	0.55	1.10 [□]	0.10*	-0.04	ns
	<i>p</i>	.057	.001	.017	.461	
Immature defences	β	0.48*	0.60*	0.08 [□]	ns	ns
	<i>p</i>	.020	.014	.008		

Abbreviations: DIF, Difficulty identifying feelings; ns, nonsignificant; * $p < .05$, [□] $p < .01$. All analyses were done on the subsample (n=85).

Figure 1: relationships between the physicians' and patients' characteristics and the physicians' emotion regulation



←-----→ Negative relation
←-----→ Positive relation