

Postprint Version	1.0
Journal website	<a href="http://www.emeraldinsight.com/Insight/viewContentItem.do;jsessionid=A71B6D199A03BE79F9608BE946F82847">http://www.emeraldinsight.com/Insight/viewContentItem.do;jsessionid=A71B6D199A03BE79F9608BE946F82847</a>
Pubmed link	
DOI	10.1108/09654280810899993

This is a NIVEL certified Post Print, more info at <http://www.nivel.eu>

## Patient anxiety in the medical encounter: a study of verbal and nonverbal communication in general practice

J.M. BENSING, NIVEL, NETHERLANDS INSTITUTE FOR HEALTH SERVICES RESEARCH, UTRECHT, THE NETHERLANDS

W. VERHEUL, NIVEL, NETHERLANDS INSTITUTE FOR HEALTH SERVICES RESEARCH, UTRECHT, THE NETHERLANDS

A.M. VAN DULMEN, NIVEL, NETHERLANDS INSTITUTE FOR HEALTH SERVICES RESEARCH, UTRECHT, THE NETHERLANDS

### ABSTRACT

**Purpose** – Many patients feel anxious when entering the consultation room, but seldom verbalize their emotions explicitly in the medical encounter. The authors designed a study to analyse the visibility of patient pre-consultation (state) anxiety in their communication during the consultation. In an attempt to learn more about how general practitioners' (GPs') communication can help patients to express their worries, the paper also aims to explore the relationship between physicians' communication and patients' articulation of concerns and worries during the consultation.

**Design/methodology/approach** – From a representative sample of videotaped consecutive consultations of 142 Dutch GPs with 2,095 adult patients, 1,388 patients (66.3 per cent) completed the pre-consultation questionnaire, including state anxiety (STAI), subjective health (COOP-WONCA-charts) and the reason for encounter (ICPC). GPs assessed the psychosocial background of patients' presented problems on a five-point Likert scale. The videotaped consultations were coded with RIAS, including global affect measures. GPs' patient-directed gaze was measured as a time-measure.

**Findings** – The results show that, on average, the patients had slightly elevated anxiety levels and one-third of the patients were highly anxious. As expected, the anxious patients seldom expressed emotional concerns directly, but did show a nonverbal and verbal communication pattern which was distinctively different from that of non-anxious patients. Whether or not patients expressed concerns

verbally was significantly related to GPs' affective communication and partnership building. Nonverbal communication seemed to play a dominant role both in sending and receiving emotional signals

Practical implications – In more than half of the consultations worries were not openly expressed, even by patients with high levels of anxiety. Patients tended to express their concerns in a more indirect way, partly by verbal, partly by nonverbal signals. GPs can facilitate patients to express their concerns more openly, not by direct questioning, but by showing verbal and nonverbal affect to the patient.

Originality/value – Focuses on the important role of verbal and nonverbal affect in physicians' communication.

## INTRODUCTION

Feelings are at the core of the interaction between physicians and patients (Hall, 1995) and can even influence health outcomes (van Dulmen and Bensing, 2002). For many people, a medical visit is accompanied by various emotions. It is clear that very few patients seek medical advice believing that their complaint is trivial; many fear that their health problems may be serious or find their symptoms so unpleasant that they are looking for relief (Cassell, 2004; Todd, 1968). Moreover, going to a doctor can provide additional stress and anxiety, for instance patients may worry about what is deemed appropriate to communicate, about wasting doctor's time or of being labelled as a hypochondriac (Barry et al., 2000; Malterud, 2005).

For all of these reasons, many doctor-patient interactions are laden with emotions (Cassell, 2004; Eide et al., 2004; Roter and Hall, 1992). However, this does not mean that patients' worries are openly discussed in the medical encounter. A number of studies have indicated that patients seldom verbalize their emotions directly and spontaneously during medical interviews, but rather tend to present indirect cues when emotional issues are at stake (Del Piccolo et al., 2000; Floyd et al., 2005; Robinson and Roter, 1999). Therefore many concerns remain unaddressed in the medical consultation (Barry et al., 2000; van den Brink-Muinen et al., 2007), which is probably one of the main reasons why physicians have difficulty in identifying emotionally distressed patients (Hall et al., 1999; Robinson and Roter, 1999). However, the extent to which patients convey their concerns may be directly dependent on physicians' communication characteristics (Eide et al., 2004) and many studies have provided evidence that patients need the feeling of a supportive and trusted environment to do so (Roter et al., 2006; Stewart, 1995; Suchman et al., 1997).

Affect-oriented communication (in particular empathy) as well as nonverbal communication (in particular patient-directed gaze) have been shown to be related to patients' disclosure of psychosocial problems as well as to GPs' correct identification of patients' distress (Bensing et al., 1995; Bensing et al., 1996). Especially nonverbal communication skills, including sending and receiving nonverbal messages, are generally seen as critical elements in eliciting emotional content of care (Roter et al., 2006). These same elements in physician communication are related to quality of care as assessed by a panel of independent peers (Bensing, 1991) and are supposed to have an influence on health outcomes as well (van Dulmen and Bensing, 2002). Furthermore, an experimental study demonstrated that only 40 seconds of compassion lead to decreases in anxiety (Fogarty et al., 1999).

The central role of affective, compassionate communication is supported by a systematic review on the influence of context effects on health outcomes which reported that the

combination of (positive) information and providing support and reassurance by the physician leads to improved health outcomes (Di Blasi et al., 2001). This review concluded that there is much inconsistency regarding the influence of emotional and cognitive care on health outcomes, although one relatively consistent finding is that physicians who adopt a warm, friendly, and reassuring manner are more effective in producing favourable health outcomes than those who keep consultations formal and do not offer reassurance.

This study focuses on patients' anxiety specifically, because patients' anxiety cannot be neglected in medical consultations without compromising the quality of care. Physicians' recognition of patients' anxiety is crucial in medical consultations because anxiety can interfere with recall of important information, for instance health education. Due to the process of attention narrowing, anxious patients tend to focus on those parts of the provided information that are directly related to their concerns. This hampers their ability to recall other important health messages (Kessels, 2003). If physicians are able to detect the object and level of patients' anxiety, they can adapt their communication to patients' needs, in order to prevent the interference of anxiety with the reception of important health messages.

The following research questions are addressed:

- What are the characteristics of patients who report high versus low anxiety upon visiting the general practitioner (GP)?
- To what extent is patients' anxiety visible in their communication in the medical consultation?
- How is patients' expression of concerns and worries related to GPs' verbal and nonverbal, affective and cognitive communication?

## **METHODS**

### **Sample**

Data were used from the Second Dutch National Survey of General Practice (Westert et al., 2005; Westert et al., 2006). From the national representative sample of 195 GPs who participated in this study, 142 GPs agreed to participate in the observational study on doctor-patient communication: 108 male and 34 female GPs (response 72.8 per cent). All GPs had completed their vocational training and had several years of experience; no residents were included. The participating GPs did not differ from the general GP population in the Netherlands in terms of age, sex, and practice location (urban – rural). In each general practice, videotapes were made of a consecutive sample of regular GP attenders, which resulted in 2,784 videotaped consultations. Patients refusal was low (11.9 per cent), and not biased compared to the Dutch population or the general practice population (Westert et al., 2006). Children under 18 years of age ( $n=416$ ) were excluded from the analyses because children had completed other questionnaires than the adult patients. In order to be certain that GPs were at ease with the procedure, the first two consultations of every GP were excluded from the observations, leaving 2,095 consultations for this study (van den Brink-Muinen et al., 2007; van Dulmen and Bensing, 2002). As this study was part of a large, comprehensive study, GPs and patients knew that videotapes were made for studying doctor-patient communication, but were not told the specific aims of this particular part of the study.

### **Procedure**

After patients who were scheduled for a regular visit had given written informed consent, all patients were asked to complete a questionnaire before they entered the consulting room. All consultations were videotaped using an unmanned digital camera, which was unobtrusively positioned with at least a full view of the GP. The GP completed a short questionnaire after each consultation.

### **Measures**

The pre-consultation patient questionnaire contained questions about demographic characteristics as well as several standardized instruments.

Anxiety was measured by the ten-item state version of the Spielberger Trait-State Anxiety Inventory (Bennett et al., 2004; Spielberger, 1983; Takayama et al., 2001). The state version of the STAI is one of the most widely used and sensitive scales for measuring patient anxiety in clinical research (Bowling, 1997). For comparison reasons the STAI-10 scores were transformed into STAI-20 scores using the formula  $STAI\ score = (1.69 \times \text{shortform STAI}) + 3.91$  (Bennett et al., 2004). Patients were divided in three groups, based on gender-specific norm-scores for state anxiety under three conditions: relaxation, normal situation, and exam situation (Spielberger, 1983).

Patients' functional health status was measured by the seven-item COOP WONCA-charts that has the following dimensions: general health, physical fitness, mood, daily activities, social engagement, pain and fatigue (van Weel et al., 1995). Higher scores indicate worse functional health. Patients' reasons for encounter were sought using an open question (patients could give three reasons for encounters). These were coded by trained coders using the International Classification for Primary Care (ICPC) (Lamberts and Wood, 1987).

The GPs completed a short questionnaire after each consultation with a few questions about the patient and his/her health problems, including a five-point rating scale about the GPs' assessment of the psychosocial background of the presented problems (1 "entirely somatic" to 5 "entirely psychosocial") (Westert et al., 2006).

The videotapes were rated using the Roter Interaction Analysis System (RIAS), a widely used international observation system with proven validity and reliability (Bensing et al., 2003; Ong et al., 1998; Roter and Larson, 2002) in which all utterances of doctor and patient are coded in mutually exclusive categories. In RIAS, "utterances" are defined as the smallest distinguishable speech segment to which a classification may be assigned. The unit may vary in length from a single word to a lengthy sentence. RIAS-categories were clustered in three main groups, which refer to the three most important functions of physician communication: affect-oriented communication, focused on relationship building (social talk, verbal empathy, showing concern), process-oriented talk, focussed at structuring the medical consultation (directions, checking for understanding, disagreements) and task-oriented communication, focused at solving patients' health problem (biomedical, respectively psychosocial questions and biomedical, respectively psychosocial information giving and counselling (Bensing et al., 2003).

Additional to the detailed coding of verbal communication, global affect ratings were made of doctors' dominance, friendliness, concern and involvement as well as patients' assertiveness, friendliness, concern and nervousness. GPs' eyecontact was measured as a time-measure by registering length of time that the GP was directly looking at the patient. We could not measure mutual gaze, because the camera was positioned to capture GPs' patient-directed gaze, leaving only a limited view on the patients' nonverbal communication. Coding was performed using OBSERVER (Noldus et al., 2000), a computerized observation system that allows direct coding of the videos, saving the codes on the digitalized tapes. The inter-observer reliability for the different communication categories was good (range of Pearson correlation coefficient  $r=0.72-0.96$ ) (van Dulmen and Bensing, 2006).

### **Statistical analyses**

Analyses were done in MLwiN 2.01 (Rabash et al., 2005) and SPSS 14. Since the dependent variables in our analyses were measured on the level of the individual consultations and the consultations were nested in GPs, we tested for each dependent variable if a significant variation was present at the GP-level. For STAI measures, this was not the case, thus we performed a single level normal regression model in SPSS. Since there was a significant variation at the GP-level on patient communication variables, we performed a two-level regression model with a random intercept to control for clustering at the GP-level normal regression models to estimate the regression coefficients and their standard errors. We controlled for clustering at the GP-level by adding a random intercept. T-statistics were used to assess the significance of the coefficients. We considered

coefficients statistically significant when probability-values were smaller than 0.05. For assessing differences between groups with low, medium and high anxiety on patient communication we performed a regression model with anxiety group as a categorical variable while controlling for patients' gender and educational level. We used normal regression models for normally distributed data and Poisson regression for count data. To test which variables predicted one or more articulated concerns versus no articulated concerns, a logistic regression model was used.

## RESULTS

### **What are the characteristics of anxious patients in general practice?**

Due to time constraints and logistic problems, only 1,388 patients completed the entire pre-consultation questionnaire (response rate: 66.3 per cent). Non-completers were younger, less educated and were less often assessed with psychosocial problems by the GP and the observers. There were no differences between completers and non-completers in patient gender and ethnicity.

The average score on the STAI of the completers was 39.1 (SD: 10.9; range: 20.8-71.5), indicating that – on average – these patients were slightly, but not extremely anxious. Based on Spielbergers' norm-scores (Spielberger, 1983), 267 patients could be placed in the “low-anxious” group (19.2 per cent), 659 patients in the medium-anxious group (47.5 per cent) and 462 patients in the “high-anxious” group (33.3 per cent). High anxious patients were more often female, less educated and had more negative scores on all health indicators (Table I). Age and ethnicity were not related to the level of state anxiety.

### [TABLE 1]

### **Is patients' anxiety visible in the medical consultation?**

Emotions were often not openly articulated in GP consultations, even not by patients with high anxiety-levels: in 61.1 per cent of all consultations (50.0 per cent of those with high-anxious patients) not one single concern or worry was voiced. Psychological (chapter P of the ICPC) or social (chapter Z) problems were diagnosed in only 9.7 per cent of the consultations (20.6 per cent of the high-anxious patients). As much as one third of the psychosocial reasons for encounter that were mentioned in the pre-consultation patient questionnaire were never expressed during the consultation. Nevertheless patients' state anxiety was reflected in their nonverbal and verbal communication (see Table II). In the first place, after controlling for gender and educational level, patients with higher state anxiety were more nervous and expressed more verbal and nonverbal concerns. According to the detailed analysis of patients' verbal communication (RIAS), patients with high state anxiety also made less social talk, showed less empathy but had more disagreements with their GP than less anxious patients. With regard to their instrumental communication, high anxiety patients asked more medical and psychosocial questions, and gave remarkably more psychosocial information. High anxiety patients asked more often for services like a prescription or referral. Consultation time was significantly longer with anxious patients: the average consultation length for low anxious patients was 9.30 minutes (SD=4.37), for medium anxious patients: 10.24 minutes (SD=4.80), and for high-anxious patients 11.25 minutes (SD=4.95).

### [TABLE 2]

### **How does GP communication relate to patients' expression of concerns?**

Corrected for gender and level of education, patients' expression of at least one concern was significantly related to GPs' verbal and nonverbal affective communication. Patients expressed more concerns when their GP was not dominant and was friendly and showed

verbally and nonverbally his or her concern with the patient. GPs' eye contact and empathy was also related to the expression of concerns, as was partnership building with the patient by asking for clarification or for patients' opinion. GPs also expressed more disagreements in consultations where patients voiced their concerns. Neither task-related biomedical communication nor task-related psychosocial communication played a role in patients' expression of concerns (Table III).

## Discussion

### [TABLE 3]

Anxious patients have problems with the reception of GPs' health education messages, because they tend to focus their attention to the topic of their worries. Therefore it is important for GPs to know their patients' worries and concerns. As in other studies (Barry et al., 2000), the patients in this general practice study seldom expressed their worries directly in the medical consultation. In the majority of the consultations not one single worry or concern was voiced by the patient. Yet these patients had on average slightly elevated anxiety levels when entering the consultation room, and one-third of the patients even had elevated anxiety levels comparable to normal adults in an exam situation (Spielberger, 1983). Compared to patients with low anxiety-levels, high anxiety patients had higher scores on all functional health indicators as measured by the COOP-WONCA-charts. They reported worse general health, a lower mood, more pain and fatigue and more problems with daily and social activities, which warrant special attention by the GP for these patients.

Although patients often do not express their worries openly, GPs communication seems to matter. Patients voiced their concerns more readily when GPs were not dominant, showed their concern and empathy (verbally as well as nonverbally, for instance by maintaining eye contact) and invested more in building partnership with the patient. Perhaps contrary to intuition, GPs' friendliness had an inverse relationship with patients' expression of concerns. It could be that patients saw the lack of friendliness as a sign that the GP took their health problems seriously, which as such can relieve a patient's anxiety (Roter and Hall, 1992). Also counterintuitive was the lack of a relationship between GPs' instrumental psychosocial communication and patients' expression of concerns. All other things equal, only affective, empathic verbal and nonverbal communication were related to patients voicing their concerns.

The results of our study are somewhat different from a Japanese study with a similar design, in which no relationship of physician communication with pre-consultation anxiety was found (Takayama et al., 2001). However, in that study no analysis was made of the visibility of patient worries in patients' verbal and nonverbal communication in the medical consultation, and the authors pointed out that cultural differences in expressing emotions could play a role (Takayama et al., 2001).

Studying the literature, it is not surprising that GPs in our study were aware of patients' distress even when this was not always explicitly articulated during the consultation. In two separate studies it was found that naïve observers were remarkably accurate in determining currently experienced (state) anxiety, even in people who consciously or unconsciously repressed unpleasant feelings (Harrigan et al., 1996). These authors also demonstrated the importance of nonverbal communication in the detection of anxiety in other people. Although high anxiety patients in our study did not voice concerns in half of the medical visits, they seemed "to leak" their distress, mainly by nonverbal communication. Thus it is very important for GPs to be aware of patients' nonverbal signals. As demonstrated in our study, GPs' own nonverbal communication also plays a pivotal role in the medical visit, as it seems to facilitate patients' expression of concerns. These skills can be taught in courses in medical and post-graduate education (Aspegren, 1999).

### **LIMITATIONS OF THE STUDY**

Although the GPs were a representative sample of the Dutch GP population, the patients in our study were not. Refusals for participating in the video-study were few (only 11.8 per cent) and not biased, but due to a multitude of reasons, only 66.3 per cent of the participating patients completed the entire pre-consultation questionnaire. Younger and less educated patients were over-represented in the non-completers. Moreover, the health problems of non-completers were less often assessed with a psychosocial background by the GP. This means that we have to be careful with regard to generalisation of the study results to these patient groups. However, as the target group of this study (anxious patients) seems to be over-represented in our study rather than underrepresented, this study probably gives a good view on the processes we wanted to study.

A second, more important limitation is the correlational nature of this study, which means that only relations could be established, not cause-and-effect. This study has the same chicken-and-egg questions, as many studies in this field. For instance, we do not know whether a GP asks psychosocial questions in a warm and affective way, because he notices patients' anxiety, or a patient becomes nervous because the GP asks psychosocial questions, which he/she does not want to answer. The biopsychosocial framework suggests the first explanation, but with a correlational design, it is not certain that this is correct. Only an experimental design would be able to provide this certainty. However, we think that in studying human interactions like doctor-patient communication, it would anyway be naïve to assume a simple linear causal relationship between doctor and patient. It is more plausible that patients influence physicians' communication and physicians influence patients' communication in an iterative process, together creating an atmosphere in which talking about some issues will more readily happen than in other types of consultation (Suchman, 2006). New methodologies may be necessary to study communication as a self-organizing pattern of meaning and relating (Suchman, 2006). Sequential analyses on the specific order of communication events could be a promising way to get more knowledge about the microdynamics of physician-patient communication, for instance by showing relevant precursors of certain types of patient or physician communication.

### **CONCLUSION**

In more than half of the GP consultations, patient worries were not openly expressed, even not by highly anxious patients. However, other verbal, but especially nonverbal signals revealed that many patients were worried. The most important finding of this study is that patients more readily express their concerns when GPs show verbal and nonverbal affect to the patient, and not when they ask direct questions.

### **REFERENCES**

- Aspegren, K. (1999), "BEME guide no. 2: teaching and learning communication skills in medicine-a review with quality grading of articles", *Medical Teacher*, Vol. 21 pp.563-70.
- Barry, C.A., Bradley, C.P., Britten, N., Stevenson, F.A., Barber, N. (2000), "Patients' unvoiced agendas in general practice consultations: qualitative study", *BMJ*, Vol. 320 No.7244, pp.1246-50.
- Bennett, J.S., Baughcum, A.E., Carmichael, S.K., She, J.X., Schatz, D.A. (2004), "Maternal anxiety associated with newborn genetic screening for type 1 diabetes", *Diabetes Care*, Vol. 27 No.2, pp.392-7.
- Bensing, J. (1991), "Doctor-patient communication and the quality of care", *Soc. Sci. Med.*, Vol. 32 No.11, pp.1301-10.
- Bensing, J., Keressens, J., Pasch, M. (1995), "Patient-directed gaze as a tool for discovering and handling psychosocial problems in general practice", *Journal of Nonverbal Behavior*, Vol. 19 No.4, pp.223-42.

- Bensing, J.M., Roter, D.L., Hulsman, R.L. (2003), "Communication patterns of primary care physicians in the United States and The Netherlands", *J. Gen. Intern. Med.*, Vol. 18 No.5, pp.335-42.
- Bensing, J., Schreurs, K., de Rijk, A. (1996), "The role of the general practitioner's affective behaviour in medical encounters", *Psychology and Health*, Vol. 11 No.6, pp.825-38.
- Bowling, A. (1997), *Measuring Disease A Review of Disease-specific Quality of Life*, Open University Press, Philadelphia, PA, .
- Cassell, E. (2004), *The Nature of Suffering and the Goals of Medicine*, 2nd ed., Oxford University Press, Oxford, .
- Del Piccolo, L., Saltini, A., Zimmermann, C., Dunn, G. (2000), "Differences in verbal behaviours of patients with and without emotional distress during primary care consultations", *Psychol. Med.*, Vol. 30 No.3, pp.629-43.
- Di Blasi, Z., Harkness, E., Ernst, E., Georgiou, A., Kleijnen, J. (2001), "Influence of context effects on health outcomes: a systematic review", *Lancet*, Vol. 357 No.9258, pp.757-62.
- Eide, H., Quera, V., Graugaard, P., Finset, A. (2004), "Physician-patient dialogue surrounding patients' expression of concern: applying sequence analysis to RIAS", *Soc. Sci. Med.*, Vol. 59 No.1, pp.145-55.
- Floyd, M.R., Lang, F., McCord, R.S., Keener, M. (2005), "Patients with worry: presentation of concerns and expectations for response", *Patient. Educ. Couns.*, Vol. 57 No.2, pp.211-6.
- Fogarty, L.A., Curbow, B.A., Wingard, J.R., McDonnell, K., Somerfield, M.R. (1999), "Can 40 seconds of compassion reduce patient anxiety?", *J. Clin. Oncol.*, Vol. 17 No.1, pp.371-9.
- Hall, J. (1995), "Affective and nonverbal aspects of the medical visit", in Lipkin, M., Putnam, A., Lazare, A. (Eds), *The Medical Interview: Clinical Care, Education and Research*, Springer, New York, NY, .
- Hall, J.A., Stein, T.S., Roter, D.L., Rieser, N. (1999), "Inaccuracies in physicians' perceptions of their patients", *Med. Care*, Vol. 37 No.11, pp.1164-8.
- Harrigan, J.A., Harrigan, K.M., Sale, B.A., Rosenthal, R. (1996), "Detecting anxiety and defensiveness from visual and auditory cues", *J. Pers.*, Vol. 64 No.3, pp.675-709.
- Kessels, R.P.C. (2003), "Patients' memory for medical information", *Journal of the Royal Society of Medicine*, Vol. 96 No.5, pp.219-22.
- Lamberts, H., Wood, M. (1987), *International Classification of Primary Care*, Oxford University Press, Oxford, .
- Malterud, K. (2005), "Humiliation instead of care?", *Lancet*, Vol. 366 No.9488, pp.785-6.
- Noldus, L., Trienes, R., Hendriksen, A., Jansen, H., Jansen, R. (2000), "The Observer-Video-Pro: new software for the collection, management and presentation of time-structured data from videotapes and digital media films", *Behavioral Research Methods, Instruments and Computers*, Vol. 32 pp.197-206.
- Ong, L.M., Visser, M.R., Kruijver, I.P., Bensing, J.M., Brink-Muinen, A., Stouthard, J.M., Lammes, F.B., de Haes, J.C. (1998), "The Roter Interaction Analysis System (RIAS) in oncological consultations: psychometric properties", *Psychooncology*, Vol. 7 No.5, pp.387-401.
- Rabash, J., Steele, F., Browne, W., Prosser, B. (2005), *A User's Guide to MLwiN Version 2.0*, University of Bristol, Bristol, .
- Robinson, J.W., Roter, D.L. (1999), "Psychosocial problem disclosure by primary care patients", *Soc. Sci. Med.*, Vol. 48 No.10, pp.1353-62.
- Roter, D., Hall, J. (1992), *Doctors Talking to Patients: Patients Talking to Doctors, Improving Communication in Medical Visits*, Auburn House, Westport, CT, .
- Roter, D., Larson, S. (2002), "The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions", *Patient. Educ. Couns.*, Vol. 46 No.4, pp.243-51.
- Roter, D.L., Frankel, R.M., Hall, J.A., Sluyter, D. (2006), "The expression of emotion through nonverbal behavior in medical visits: mechanisms and outcomes", *J. Gen. Intern. Med.*, Vol. 21 No.1, pp.28-34.
- Spielberger, C. (1983), *Manual for the State-Trait Anxiety Inventory (STAI)*, Consulting Psychologists Press, Palo Alto, CT, .
- Stewart, M.A. (1995), "Effective physician-patient communication and health outcomes: a review", *CMAJ*, Vol. 152 No.9, pp.1423-33.

- Suchman, A.L. (2006), "A new theoretical foundation for relationship-centered care: complex responsive processes of relating", *J. Gen. Intern. Med.*, Vol. 21 No.1, pp.40-4.
- Suchman, A.L., Markakis, K., Beckman, H.B., Frankel, R. (1997), "A model of empathic communication in the medical interview", *JAMA*, Vol. 277 No.8, pp.678-82.
- Takayama, T., Yamazaki, Y., Katsumata, N. (2001), "Relationship between outpatients' perceptions of physicians' communication styles and patients' anxiety levels in a Japanese oncology setting", *Soc. Sci. Med.*, Vol. 53 No.10, pp.1335-50.
- Todd, L. (1968), "The doctor in a changing world", *British Medical Journal*, .
- van den Brink-Muinen, A., van Dulmen, A.M., Jung, H.P., Bensing, J.M. (2007), "Do our talks with patients meet their expectations?", *J. Fam. Pract.*, Vol. 56 No.7, pp.559-68.
- van Dulmen, A.M., Bensing, J.M. (2002), "Health promoting effects of the physician-patient encounter", *Psychology, Health and Medicine*, Vol. 7 pp.289-300.
- van Dulmen, A.M., Bensing, J.M. (2006), "Communication in general practice", in Westert, G.P., Jabaaij, L., Schellevis, F.G. (Eds), *Morbidity, Performance and Quality in Primary Care*, Radcliffe Publishing, Abingdon, pp.170-6.
- van Weel, C., Konig-Zahn, C., Touw-Ofen, F., van Duijn, N., Meyboom-de Jong, B. (1995), *Measuring Functional Health Status with the COOP/WONCA Charts: A Manual*, NCG/NCH, Groningen, .
- Westert, G., Jabaaij, L., Schellevis, F. (2006), *Morbidity, Performance and Quality in Primary Care*, Radcliffe Publishing, Oxford, .
- Westert, G.P., Schellevis, F.G., de Bakker, D.H., Groenewegen, P.P., Bensing, J.M., van der, Z.J. (2005), "Monitoring health inequalities through general practice: the Second Dutch National Survey of General Practice", *Eur. J. Public Health*, Vol. 15 No.1, pp.59-65.

## TABLES

Table I: background characteristics of patients with different anxiety levels

	Low anxiety (n = 267)	Medium anxiety (n = 659)	High anxiety (n = 462)	Total (n = 1,388)
Women (%)	51 <sup>c</sup>	60	67 <sup>a</sup>	61
Average age (years)	48.5	47.8	47.1	47.7
Ethnic minority (%)	10.0	10.4	15.5	12.0
<i>Educational level</i>				
Low	17.0	18.0	25.3	20.2
Medium	57.5	61.8	59.8	60.3
High	25.5	20.2	14.9	19.5
<i>Problems<sup>d</sup> with:</i>				
General health	2.61 <sup>b,c</sup>	3.10 <sup>a,c</sup>	3.59 <sup>a,b</sup>	3.16
Fitness	2.39 <sup>c</sup>	2.53 <sup>c</sup>	2.72 <sup>a,b</sup>	2.56
Mood	1.52 <sup>b,c</sup>	1.98 <sup>a,c</sup>	2.98 <sup>a,b</sup>	2.19
Daily activities	1.85 <sup>b,c</sup>	2.10 <sup>a,c</sup>	2.80 <sup>a,b</sup>	2.28
Social activities	1.42 <sup>b,c</sup>	1.63 <sup>a,c</sup>	2.26 <sup>a,b</sup>	1.80
Pain	2.47 <sup>c</sup>	2.68 <sup>c</sup>	3.05 <sup>a,b</sup>	2.76
Fatigue	2.16 <sup>b,c</sup>	2.41 <sup>a,c</sup>	2.98 <sup>a,b</sup>	2.55

**Notes:** <sup>a</sup>Different from low-anxious patients; <sup>b</sup>Different from medium-anxious patients; <sup>c</sup>Different from high-anxious patients; <sup>d</sup>Measured by the COOP-WONCA-charts (van Weel *et al.*, 1995)

Table II. the visibility of patient anxiety in patient communication (regression analysis with STAI as dependent variable and patient communication as independent variables)

	Low anxiety		Medium anxiety		High anxiety		Group difference
	Mean	SD	Mean	SD	Mean	SD	
<i>Nonverbal affection</i>							
Assertiveness	3.97	0.89	3.88	0.96	3.94	0.97	$p = 0.158$
Friendliness	4.46	0.64	4.39	0.69	4.29	0.78	$p = 0.025$
Concern	3.51	1.10	3.71	1.06	3.98	1.11	$p < 0.001$
Nervousness	2.02	0.93	2.23	0.98	2.46	1.10	$p < 0.001$
<i>Affective talk</i>							
Social talk	9.62	9.19	8.65	10.13	7.17	7.83	$p < 0.001$
Empathy	29.63	18.60	31.76	19.52	33.76	18.75	$p = 0.002$
Concern	1.30	2.97	1.34	2.41	2.07	3.23	$p < 0.001$
<i>Process-oriented talk</i>							
Partnership building	0.27	0.74	0.32	0.79	0.36	0.84	$p = 0.23$
Disagreements	0.38	0.91	0.47	1.17	0.57	1.45	$p = 0.026$
Directions	0.96	1.54	0.91	1.28	0.82	1.28	$p = 0.296$
<i>Task-oriented talk</i>							
Medical questions	2.64	3.00	3.01	3.01	3.31	2.00	$p = 0.022$
Psychosocial questions	0.21	0.63	0.26	0.78	0.43	1.16	$p < 0.001$
Lifestyle questions	0.21	0.85	0.19	0.62	0.21	0.74	$p = 0.60$
Medical information	34.30	20.65	38.08	23.69	36.43	23.34	$p = 0.019$
Psychosocial information	14.58	19.92	16.02	22.30	29.72	42.09	$p < 0.001$
Lifestyle information	3.05	5.56	3.17	5.41	3.33	5.35	$p = 0.58$
Request services	0.30	0.82	0.21	0.52	0.36	0.83	$p < 0.001$
Other	5.20	4.86	4.61	4.10	4.72	5.00	$p = 0.079$

Notes: Controlled for gender ( $p < 0.001$ ) and education (n.s.)

Table III. The effects of GP communication upon patients' expression of concerns

Predictor	<i>b</i>	exp( <i>b</i> )	95% CI	$\beta$	exp( $\beta$ )	<i>p</i>
<i>Non verbal affect</i>						
Patient-directed gaze (%)	0.01	1.01	1.00-1.02	0.19	1.21	0.01
Physician dominance	-0.38	0.69	0.60-0.78	-0.40	0.67	< 0.001
Physician friendliness	-0.43	0.65	0.52-0.81	-0.32	0.73	< 0.001
Physician concern	0.20	1.22	1.07-1.41	0.22	1.25	< 0.01
Physician commitment	-0.01	0.99	0.82-1.20	-0.01	0.99	0.91
<i>Affective talk</i>						
Social talk	-0.01	0.99	0.98-1.01	-0.07	0.94	0.34
Empathy	0.01	1.01	1.01-1.02	0.38	1.46	< 0.001
Concern	0.29	1.34	1.24-1.46	0.60	1.83	< 0.001
<i>Process oriented talk</i>						
Partnership building	0.07	1.07	1.00-1.14	0.14	1.15	0.04
Disagreements	0.32	1.38	1.12-1.70	0.24	1.27	< 0.01
Directions	0.02	1.02	1.00-1.04	0.15	1.16	0.05
<i>Task-oriented talk</i>						
Medical questions	0.00	1.00	0.98-1.02	-0.01	0.99	0.89
Psychosocial questions	0.02	1.02	0.98-1.07	0.10	1.10	0.23
Lifestyle questions	-0.05	0.95	0.88-1.04	-0.08	0.92	0.25
Medical info + counseling	0.00	1.00	0.99-1.01	0.00	1.00	0.96
Psychosocial info + counseling	0.00	1.00	0.98-1.01	-0.05	0.95	0.53
Lifestyle info + counseling	-0.01	0.99	0.96-1.01	-0.07	0.93	0.34
Other	-0.02	0.98	0.96-1.01	-0.07	0.93	0.27

**Notes:** Exp(*b*) is the odds ratio at a change of one measurement unit and exp( $\beta$ ) is the oddsratio at change of one standard deviation. The model contained a constant and was controlled for sex and education