Patient Education and Counseling 75 (2009) 58–66

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Communication Study

Can dimensions of national culture predict cross-national differences in medical communication?☆

Ludwien Meeuwesen [a,*], Atie van den Brink-Muinen [b], Geert Hofstede [c]

[a] Interdisciplinary Social Science Department, Utrecht University, Research Institute for 'Psychology & Health', P.O. Box 80.140, 3508 TC Utrecht, The Netherlands
[b] Netherlands Institute for Health Services Research (NIVEL), Research Institute for 'Psychology & Health', Utrecht, The Netherlands
[c] Professor Emeritus of Organizational Anthropology and International Management at Maastricht University, Maastricht, The Netherlands

ARTICLE INFO

Article history:
Received 26 March 2008
Received in revised form 15 September 2008
Accepted 26 September 2008

Keywords:
Medical communication
Cross-national comparison
Culture dimensions
Power distance
Uncertainty avoidance
Individualism–collectivism
Masculinity–femininity
Wealth

ABSTRACT

Objective: This study investigated at a country level how cross-national differences in medical communication can be understood from the first four of Hofstede's cultural dimensions, i.e. power distance, uncertainty avoidance, individualism/collectivism and masculinity/femininity, together with national wealth.
Methods: A total of 307 general practitioners (GPs) and 5820 patients from Belgium, Estonia, Germany, Great Britain, the Netherlands, Poland, Romania, Spain, Sweden and Switzerland participated in the study. Medical communication was videotaped and assessed using Roter's interaction analysis system (RIAS). Additional context information of physicians (gender, job satisfaction, risk-taking and belief of psychological influence on diseases) and patients (gender, health condition, diagnosis and medical encounter expectations) was gathered by using questionnaires.
Results: Countries differ considerably form each other in terms of culture dimensions. The larger a nation's power distance, the less room there is for unexpected information exchange and the shorter the consultations are. Roles are clearly described and fixed. The higher the level of uncertainty avoidance, the less attention is given to rapport building, e.g. less eye contact. In 'masculine' countries there is less instrumental communication in the medical interaction, which was contrary to expectations. In wealthy countries, more attention is given to psychosocial communication.
Conclusion: The four culture dimensions, together with countries' wealth, contribute importantly to the understanding of differences in European countries' styles of medical communication. Their predictive power reaches much further than explanations along the north/south or east/west division of Europe.
Practice implications: The understanding of these cross-national differences is a precondition for the prevention of intercultural miscommunication. Improved understanding may occur at microlevel in the medical encounter, as well as on macrolevel in pursuing more effective cooperation and integration of European health care policies.

© 2008 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

The last decade has shown a growing interest in cross-national studies in medical communication in European health care, due to worldwide migration as well as ongoing European harmonisation and integration of health care policies and cooperation in health care [1–9]. Strengthening the role of primary care is one of the aims of European health care policy [10]. Although the number of these cross-national publications is growing, studies which incorporate cultural dimensions of nations are mostly lacking [11]. The present study tries to fill this gap. Nations may differ substantially in norms, values and behaviour [12–14], which seem to play an important role in medical health care too [6,15–17]. Knowledge about these differences may contribute importantly to the prevention of cross-national miscommunication and to effective cooperation and integration of health care policies.

The *aim* of this study is to investigate how differences in the communicative behaviour of general practitioners (GPs) and patients can be understood by cultural dimensions on a national level in 10 European countries (Belgium, Estonia, Germany, Great

☆ This article is based on secondary analysis of data of the Eurocommunication-I study, which has been made possible by funding from the BIOMED-II research programme of the European Union (contract no. BMH4-CT96-1515), and of the Eurocommunication-II study, funded from the INCO-Copernicus programme of the European Union (contract no. ERBIC 15-CT98-0312).
* Corresponding author. Tel.: +31 30 253 6729; fax: +31 30 253 4733.
E-mail address: l.meeuwesen@uu.nl (L. Meeuwesen).

0738-3991/$ – see front matter © 2008 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.pec.2008.09.015

Britain, The Netherlands, Poland, Romania, Spain, Sweden and Switzerland).

Before discussing existing literature about these communicative differences (see Section 1.2), attention will be paid to cultural approaches. Differences between societies' health care systems cannot be studied in isolation from their cultural and social aspects. The cultural aspects refers to the entire knowledge a human being needs to function adequately in a given situation (a group, (sub)culture, nation, etc.) [18]. Hofstede [19] introduced the term 'mental programming' to refer to the internalisation of these cultural processes. This common knowledge also refers to the health care system, which turns out to differ across countries.

1.1. Dimensions of national culture

To approach conceptually a nations' culture, we applied Hofstede's dimensions, which developed from research in one multinational business corporation in 40 countries [19] and now extend to 74 countries [20]. Hofstede defines values as broad tendencies to prefer certain state of affairs over others. The research showed that similar respondents in different countries use different solutions to the same four basic problems: (1) social inequalities, (2) dealing with the impredictable, (3) relation between individual and group, and (4) emotional role division between the genders. Based on these findings, Hofstede formulated four dimensions of national culture, labelled as power distance, uncertainty avoidance, individualism–collectivism, and masculinity–femininity. Later, a fifth dimension, long-term orientation was added. Box 1 contains the definitions of these dimensions.

Survey studies of large samples of similar respondents in different countries enabled Hofstede and others to attach indices (on a continuum between 100 and 0) to countries on these five dimensions. The indices describe societies and should not be applied to individuals. The dimensions are extensively validated against other aspects of national societies as well as tests of their cross-time stability [13]. Table 1 contains the scores on the five dimensions, as assessed by Hofstede [20], for the 10 countries included in present study. Countries' wealth is added, as it may be a potential confounder (see Section 2).

The 10 participating European countries differ considerably in their power distance, uncertainty avoidance, individualism, masculinity and wealth, but less in their long (short)-term orientation. For example, Romania scores high on power distance as well as uncertainty avoidance, and is quite collectivistic. Poland is lower than Romania on power distance, and more individualistic. Great Britain scores highly individualistic with a lower power distance, and fairly masculine. Other equally wealthy countries like the Netherlands and Sweden resemble Great Britain, except that both score very feminine. Belgium resembles the Netherlands on individualism, but is more similar to Poland with regard to power distance. Spain and Great Britain score quite short-term oriented, while the Netherlands and Switzerland score somewhat longer term.

The intercorrelations (Table 2) show that across these 10 countries a larger power distance goes hand in hand with higher levels of uncertainty avoidance, with more collectivism, and with less wealth. Wealth is related to individualism. The more individualistic a country is, the smaller the power distance and the weaker the uncertainty avoidance. These correlations are specific to the present sample of European countries, and could have looked different if countries of other continents would have been included [13].

Box 1. Five culture dimensions, derived from Hofstede and Hofstede [20].

Power distance	The extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally (from small to large).
Uncertainty avoidance	The extent to which the members of a culture feel threatened by ambiguous or unknown situations (from weak to strong).
Individualism vs. collectivism	Individualism stands for a society in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family only. Its opposite, collectivism, stands for a society in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty.
Masculinity vs. femininity	Masculinity stands for a society in which emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Its opposite, femininity, stands for a society in which emotional gender roles overlap: both men and women are supposed to be modest, tender, and concerned with the quality of life.
Long-term vs. short-term orientation	Long-term orientation stands for the fostering of virtues oriented towards future rewards, in particular perseverance, thrift, and adapting to changing circumstances. Is opposite, short-term orientation, stands for the fostering of virtues related to the past and present, in particular respect for tradition, preservation of 'face', and fulfilling social obligations.

Table 1
Scores of the predictor variables for 10 countries; number of participating doctors and patients (derived from Hofstede and Hofstede [20]).

Country	PDI	UAI	ICI	MFI	LSTO	GNP	GPs	Patients
Belgium	65	94	75	54	38	24,880	31	601
Estonia	40	40	60	30	–	4,070	27	516
Germany	35	65	67	66	31	25,140	43	889
Great Britain	35	35	89	66	25	25,400	27	446
Netherlands	38	53	80	14	44	25,200	31	579
Poland	68	68	60	64	32	4,430	35	678
Romania	90	90	30	42	–	1,680	30	576
Spain	57	86	51	42	19	14,790	27	539
Sweden	31	29	71	05	33	28,640	25	376
Switzerland	34	58	68	70	40	40,150	31	620
Total							307	5820

PDI = power distance index, UAI = uncertainty avoidance index, ICI = individualism collectivism index, MFI = masculinity femininity index, LSTO = long (short)-term orientation and GNP = per capita gross national product. A high number on each variable denotes a high score on the variable as named; GPs = number of participating GPs; patients = number of participating patients.

Table 2
Intercorrelations (Pearson) between five dimensions of national culture and wealth ($n = 10$).

Measures	1	2	3	4	5
1 Power distance (PDI)	1.00				
2 Uncertainty avoidance (UAI)	.82**	1.00			
3 Individualism–collectivism (ICI)	−.69*	−.56[a]	1.00		
4 Masculinity–femininity (MFI)	.17	.33	.04	1.00	
5. Long (or short)-term orientation (LSTO)	−.18	−.08	.38	−.21	1.00
6 Wealth (GNP)	−.64*	−.27	.55[a]	.18	.47

[a] $p < 0.10$.
* $p < 0.05$.
** $p < 0.01$.

1.2. Dimensions of culture related to medical communication

Although the Hofstede dimensions arose in the domain of industrial psychology, they deal with issues that seem equally relevant to medical psychology and health care. For example, some relevant connotations related to power distance could be hierarchical versus equalitarian relations in doctor–patient communication, degree of conformism, information exchange, and shared decision-making; for uncertainty avoidance these could be patient's emotionality or anxiety and stress, doctor's task-orientation, preference for technological solutions, belief in specialists, doctor's uncertainty avoidance, degree of medicalisation; for individualism they could be patient autonomy, possibility of choice, flexibility of social roles, less conformity, and psychosocial information exchange; masculinity could be associated with instrumental (or curing) behaviour, disease centred communication, biomedical talk, and doctor's gender; and long (or short)-term orientation with future-orientedness (like prevention) or symptom orientedness [9,13,19,21–24]. From a culture theoretical approach, the present study enables tracing which cultural factors are related to medical communication and context characteristics in health care. Countries differ in the degree to which primary care professionals function as gatekeepers, patient expectations, doctor's beliefs and attitudes, medical communication in terms of consultation length and instrumental versus affective behaviour, and diagnosis [1,8,10,25]. Until now, explanations from a cultural perspective are mostly lacking, and those according to the east–west or north–south axis are not sufficient. For example, Polish doctors are more directive and verbally dominant compared to North-American colleagues, but also much warmer, by expressing positive feelings towards the patients [26]. They may be described as 'warm autocrats' compared to North American 'cold experts'. Poland has a larger power distance compared to the U.S. There is some indication that medical communication in the U.S. and the U.K. is somewhat more instrumental (i.e. more masculine) compared to the Netherlands [27]. Further, Belgian doctors are rather disease-centred, and Dutch doctors are more patient-centred, while doctors in the U.K. are in-between [24]. Japanese consultations are more instrumental compared to North American consultations in general [15]. On diagnostics, some countries have specific diseases, that have no clear equivalents elsewhere—for example crise de foie (liver problems) in France, Herzinsufficienz and Kreislaufkollaps (blood circulation problems) in Germany, or a variety of chills and obsessions with bowel movements in the U.K. [17]. Further, more traditional values were related to lower prevalence of psychiatric morbidity compared to countries holding more modern values [21]; there seems to be more preference for folk-illnesses too [6]. Together with the observations of cross-national differences in presentation of complaints by patients [28], these data suggest that a country's specific cultural context seems to play a prominent role in (the results of) medical communication [6].

Based on the concepts underlying the cultural dimensions, on the scores of the Hofstede dimensions for the 10 participating countries, and on the findings of cross-national differences on medical communication described above, a number of *expectations* can be formulated:

1. In countries with a larger *power distance*, consultations will be shorter, patients will speak less, patient and doctor roles are more fixed, patient expectations regarding the medical encounter will be more uniform, and there will be less opportunity for unexpected information exchange compared to countries with a smaller power distance.
2. The stronger a countries' uncertainty avoidance, the more instrumental talking, the less affective talking and the more biomedical exchange can be expected.
3. In *individualistic* (wealthier) countries there will be more exchange of psychosocial information.
4. The more *masculine* a country, the more instrumental (curing or disease-centred) communication will dominate, the less attention will be paid to psychosocial issues and the more frequently doctors will be men.

2. Methods

2.1. Type of study and data collection

The study was cross-sectional, and based on a secondary analysis of data of two Eurocommunication studies [7,10]. These data were gathered from 1999 to 2001. The sampling method differed from one country to another, on account of the varying willingness of GPs to participate, or for other practical reasons. The GPs are representative of the entire GP population in each participating country, as was shown by a comparison with the study population of the task profile study, with some exceptions [29]. Patients consulting a participating GP on the day(s) of the data collection were approached randomly. Both the GPs and the patients signed an informed consent form. The non-response rate of patients was 7.8%. Non-response analysis showed that the representativeness was satisfying in nearly all respects. A total of 307 GPs and 5820 patients participated in the study.

The data (outcome measures) were derived from observations of video consultations, analysis of patient and GP questionnaires and GP registration. The instruments, the scale composition and the reliability of the measurements are described in detail elsewhere [7,8,10]. The instruments can be summarized as follows. In the GP questionnaire information was collected about subjects including demographics, the GP's experience of general practice, and practice characteristics. The GPs filled in the questionnaire in their own language. For the patient questionnaires researchers from the participating countries translated the questionnaires from English to their own language. Afterwards, they were back-translated into English by professional translators. The questionnaires included items on demographics, health condition and expectations. The video observations included the RIAS coding (see Section 2.3.4) and a number of consultation characteristics, such as consultation length, patient utterances and eye contact (see Section 2.3.3). All these observations were performed by two trained research assistants.

2.2. Predictor variables

The predictor variables were Hofstede's five dimensions of national culture, i.e. power distance index (PDI), uncertainty avoidance index (UAI), individualism–collectivism index (ICI), masculinity–femininity index (MFI), and long (or short)-term orientation index (LSTO). A sixth predictor, national wealth, was added to the design, because a country's wealth may be a potential confounder [11,13]. As better resources allow more people to achieve their goals, and as higher education and income confer higher status and more knowledge, it is likely that individuals and nations with higher incomes will behave differently when interacting. The scores of the five cultural dimensions per country were derived from Hofstede and Hofstede [20], and lie on a continuum between 100 and 0; the scores for the 10 participating countries of the present study lie between 94 and 5. The higher the score, the higher the power distance, uncertainty avoidance, individualism, masculinity and long-term orientation, respec-

tively. National wealth was operationalised as the per capita income of nations in terms of the purchasing power of individuals [30]. Data are given in Table 1.

2.3. Outcome variables

The effect of the six independent variables was assessed on a series of relevant health care-related variables in primary care (a total of 34), derived from the observations and questionnaires of the two Eurocommunication studies as mentioned [7,10].

The included variables were divided into *context* variables and *medical communication* variables. The context variables included four doctor items (gender, job satisfaction, risk-taking and belief of psychological influence on diseases), four patient items (health condition, diagnosis, medical encounter expectations in biological terms, and medical encounter expectations in psychosocial terms), and three consultation characteristics (eye contact, consultation length and patient utterances). The medical communication variables included patients' affective and instrumental behaviour (10 items), and doctor's affective and instrumental behaviour (12 items).

2.3.1. Context variables, doctor (4 items)

1. *GPs' gender* as percentage of male doctors included in the present study.
2. *G's job satisfaction* was measured on a 7 item scale, with five answer categories [31,32]. The higher the score, the more satisfied the doctors are.
3. *GPs' risk-taking in medical decision-making* was based on a 5 item scale, adapted for this study [23]. The higher the score, the more risk-taking (such as waiting, no immediate treatment) will take place. Risk-taking needs to be regarded mainly as 'wait and see'.
4. *GPs' beliefs of psychological influence on diseases*: the degree to which doctors think that psychosocial factors might influence the onset or acute exacerbation of disorders was measured by a 12 item scale [32]. The higher the score, the greater doctors' belief in psychosocial influence.

2.3.2. Context variables, patient (5 items)

5. *Patients' gender* as percentage of male patients included in the present study.
6. *Patients' health condition*: patients' perception of their overall health condition was questioned by an item ('during the past 2 weeks, how would you rate your health in general?', answered on a 5-point scale) derived from the COOP/WONCA charts, and validated for cross-national use [33]. Originally, the lower the score, the better patients' health. These scores are recoded in the present study: the higher the score, the better patient's general health condition.
7. *Patients' diagnosis*: patients' diagnosis was coded according to the International Classification of Primary Care [34]. The diagnoses were labelled as either psychosocial (psychological and social) or not.
8/9. *Patients' expectations of the medical encounter*: to measure patients' expectations regarding the medical encounter, a 10-item scale was used dealing with the expectations and performance of communication aspects. This scale was based on the combining and adaptation of the Quote scale [35] and the patient request form [8,36]. Factor analysis of questions on expectations and performance revealed two subscales: a biomedical scale of 6 items and a psychosocial scale of 4 items. Correspondence and discrepancy between expectations and performance was calculated. Correspondence was defined if items were expected as well as performed, or if items were neither expected nor performed. Discrepancy was applicable if items were expected but not performed, or if performed items were not expected. This resulted in *two items*: Percentage correspondence between expectations and performance on biomedical issues, as well as on psychosocial issues. These two variables are an indicator for the anticipation of roles and behaviour in the specific medical context.

2.3.3. Context variables, consultation characteristics (3 items)

10. *Consultation length*: measured in minutes and seconds.
11. *Patient utterances*: to measure the conversational contribution of the patients, the patient utterances relative to the total count of utterances of both GPs and patients were counted. Percentages were used by dividing patient utterances by the total of all (GP and patient) utterances. Utterances – as unit of analysis – were based on the RIAS coding (see below).
12. *Eye contact*: eye contact between doctor and patient was measured by GPs' patient directed gaze, i.e. the time the GP looked directly into the patient's face. This was rated by stopwatch. The length of time of eye contact was related to the length of time the GP is sitting opposite the patient, in other words the length of time the GP was 'on the screen' and was able to look at the patient.

2.3.4. Verbal behaviour, 12 doctor items and 10 patient items

2.3.4.1. Verbal affective and instrumental behaviour of doctor and patient. Data about doctor–patient communication were derived from videotapes of the consultations and assessed by Roter's interaction analysis system (RIAS) [7,10,37]. The system differentiates both affective (socio-emotional) and instrumental (task-focussed) verbal behaviour in doctors and patients, reflecting the care-cure dimension. The RIAS, which was based on the work of Bales [38], enables the identification, categorisation and quantification of salient features of doctor–patient communication. The unit of analysis is an utterance or the smallest meaningful string of words. All utterances were assigned to mutually exclusive categories. The consultations were rated by means of a computerized rating method named OBSERVER [39].

The same person trained each group of (at least two) observers in each country in the same way, with the aim of achieving equivalent ratings of the videotaped consultations in all countries. Observers were always native speakers (with a university education). Inter-rater reliability was measured for each country separately, by calculating Pearson's correlation coefficient for 20 consultations of different doctors rated by pairs of observers. It appeared that 79% of inter-rater reliabilities were quite good (0.7 or higher), 15% were moderately good (between 0.5 and 0.7) and 6% were too low (<0.5), especially for the 'other utterances' category. The content validity and discriminant validity of the RIAS have been proven to be satisfactory [40].

All behaviour was merged into 10 clusters for the doctors and 8 for the patients. The affective dimension included social behaviour, agreement (mainly backchannelling like 'hm'), rapport-building (verbal attention, showing concern, reassurance) and facilitation (paraphrasing and clarification) for both patients and doctors. The instrumental dimension contained orientation (giving directions) (only doctors), asking questions, giving information, counselling (only doctors). Communication categories were expressed as percentages of the total number of utterances of GPs and patients, respectively.

Further, while the content of questions, information conveyance and counselling was coded as biomedical or psychosocial, two items were added: biomedical talk and psychosocial talk. Based on these two items, a ratio of biomedical/psychosocial talk was calculated too, for both doctors and patients. Lastly, a ratio for instrumental/affective behaviour was calculated for doctors and patients. In sum, this resulted in 12 doctor items and 10 patient items regarding verbal behaviour.

2.4. Analyses

A check for normal distribution of the variables was performed, and some variables with non-normal distributions (power distance index, wealth, consultation length) were transformed mathematically to enable parametric statistics. Stepwise regression analysis was performed to find the strongest predictors for the separate outcome measures. The adjusted R^2 are presented instead of the normal R^2 values, because of the small sample ($n = 10$). For the same reasons, the p-value was set at 10% instead of 5%. The dimension 'long versus short-term orientation' was left out of these analyses, as there was little variance among the countries, and two countries had no data at all. Based on these results, an ecological factor analysis was done with the most relevant outcome variables ($n = 27$). Because this is an ecological factor analysis, based on data at the level of countries which are different from individual factors, the number of cases need not be larger than the number of variables. The stability of the results of ecological factor analysis is not determined by the number of aggregated cases, but by the number of individuals whose scores are aggregated into these cases [12]. This factor analysis included 27 outcome variables instead of the original 34; seven variables were excluded because of collinearity (if $r > .85$). It generated four communication styles, together explaining 79% of the variance (Table 3).

Table 3
Factor analysis (with varimax rotation) with 27 outcome measures, four factors.

Variables		1	2	3	4
GP	Male				
	Job satisfaction		−.525		
	Risk-taking				.732
	Psy infl				.655
Patient	Male	−.703			
	Health	−.825			
	Corr. Bio	.914			
	Corr. Psy	.807			
Encounter	Length	−.552			
	p-Speak				.777
	Eye contact			.995	
GP communication	Social			−.757	
	Rapport			.703	
	Facility	.756			
	Orient			−.614	
	Quest	−.654	.669		
	Info	−.902			
	Biotalk		.766		
	Psytalk				.692
	Ratio in/af		.874		
P communication	Social			−.758	
	Rapport	.511			
	Facility			−.642	
	Quest		.877		
	Info		.802		
	Psytalk				.799
	Ratio in/af		.795		

Explained variance: $R^2 = 79\%$.

Factor 1, *Fixed communication roles,* included 8 items focusing on highly predictable roles in the medical encounter, shorter consultation length, and less question-asking and information conveyance, doctors' facilitating the communication and patients' rapport-building. A lower percentage of male patients and lower subjective health of patients were also included.

Factor 2, *Biomedical information exchange,* included 7 items related to instrumental behaviour, expressed by physicians' question-asking and biomedical talk and by patients' question-asking and information conveyance, together with physicians' lower job satisfaction.

Factor 3, *Rapport-building,* contained 6 items high on eye contact and doctors' rapport-building, and lower on social talk and providing orientation.

Factor 4, *Psychosocial information exchange,* had 5 items, and focused on the exchange of psychosocial information, together with doctors' risk-taking and their belief in psychosocial influences on the patient's disease.

Finally, a stepwise regression of the five predictors on these four communication styles was performed.

3. Results

3.1. Context variables

Table 4 shows the regression effects of the predictors on the context variables.

In countries where the *power distance* is larger (such as Romania, Poland and Belgium), patients' psychosocial expectations were closely met during the medical encounter. This is an indication for rather fixed roles regarding the exchange of psychosocial information.

In countries scoring high on *uncertainty avoidance*, physicians were less satisfied with their job. There was a stronger belief in psychosocial influences on the patient's disease. Further, physician and patient had less eye contact in the medical encounter (Belgium, Romania and Spain).

The largest effects were from the dimension *individualism/collectivism,* on biomedical expectations of patients: the more individualistic a country was the less concordance between expectations and performance. This is an indication of more flexible doctor and patient roles. Further, the more individualistic, the more importance physicians attached to psychosocial influences on the disease. This is strengthened by strong uncertainty avoidance (like in Belgium). Physicians also took more risks ('wait and see') in individualistic countries. At last, in the more individualistic countries, a higher share of the patients consulting the GP were male.

Sometimes, a country's *wealth* was a stronger predictor than individualism: richer countries had more male physicians, better health condition of patients, more psychosocial diagnoses, longer consultations and greater conversational attribution of patients.

The dimension *masculinity/femininity* did not show any effect on the context variables.

3.2. Physicians' verbal behaviour

Physicians showed more social talk in higher *power distance* countries, but less backchannelling (both affective talk). They gave more orientation to their patients, which is seen as instrumental behaviour (Table 5). Physicians of countries high on *uncertainty avoidance* tended to pay more attention to psychosocial talk with the patients.

The largest effects were shown in the *individualism/collectivism* dimension. The more individualistic a nation was, the more

Table 4
Effects of culture dimensions on context variables (stepwise regression).

Dependent variable	Effects	Adjusted R^2	T value	p-Value
GP				
Gender	Wealth	41%	2.689	.028
Job satisfaction	Uncertainty avoidance	32%	−2.275	.05
Risk-taking	Individualism/collectivism	25%	2.001	.08
Belief psychosocial influence	Individualism/collectivism	23%, step 1	3.368	.012
	Uncertainty avoidance	52%, step 2	2.403	.047
Patient				
Gender	Individualism/collectivism	47%	2.980	.018
Health condition	Wealth	54%	3.387	.01
Psychosocial diagnosis	Wealth	57%	3.593	.007
Expectations, biomedical	Individualism/collectivism	82%	−6.572	.000
Expectations, psychosocial	Power distance	53%	3.349	.01
Consultation				
Length	Wealth	37%	2.492	.074
Patient utterances	Wealth	30%	2.221	.057
Eye contact	Uncertainty avoidance	42%	−2.729	.026

backchannelling ('hm') were given by the physician, and the more information was given. Physicians asked relatively fewer questions to patients and did less counselling in more individualistic countries (UK, Netherlands and Belgium). In sum, the more individualistic a country, the more affective behaviour is shown by physicians.

Contrary to expectations, it is observed that in more *masculine than feminine* countries physicians showed more social talk and agreements, talking relatively less about biomedical issues.

3.3. Patients' verbal behaviour

The smaller the *power distance* in a country, the more backchannels the patients gave (e.g. Switzerland). In countries with strong *uncertainty avoidance* more agreements ('hm' or 'yes') were given by patients (Table 6).

The more masculine a country was, the more social talk, backchannelling and facilitation the patients gave. However, the more feminine a country was, the more information patients gave, and the more biomedical talk. In sum, in more masculine countries there is relatively more affective than instrumental patient talk, which was not expected.

3.4. Communication styles

Countries' *power distance* explained 72% of the *Fixed communication roles* (Table 7): a larger power distance produced more correspondence between expectation and evaluation, more fixed doctor and patient roles, less information conveyance by the doctor, more female patients, poorer patient health, shorter medical encounters, and fewer doctors' facilitating their patients and providing counselling. Conversely, in countries with smaller power distance, there will be more chances of a flexible communication style, with doctors' greater information conveyance to patients. This is according to our expectation.

The level of *uncertainty avoidance* explained 41% of *Rapport-building*. Countries with a higher tolerance for uncertainty, had more eye contact and paid more attention to rapport building. Doctors seemed to be more open to their patients. P*sychosocial*

Table 5
Effects of culture dimensions on verbal behaviour of physicians (stepwise regression).

Dependent variable	Effects	Adjusted R^2	t value	p-Value
Affective				
Social talk	Power distance	40%, step 1	2.917	.02
	Masculinity	63%, step 2	2.493	.04
Agreement	Individualism/collectivism	69%, step 1	2.810	.021
	Power distance	80%, step 2	−3.645	.011
	Masculinity	89%, step 3	2.626	.039
Rapport building	–			
Facilitation	–			
Instrumental				
Orientation	Power distance	27%	2.095	.069
Asking questions	Individualism/collectivism	41%	−2.682	.028
Giving information	Individualism/collectivism	50%	3.164	.01
Counseling	Individualism/collectivism	54%	−3.389	.01
Biomedical talk	Masculinity	45%	−2.867	.02
Psychosocial talk	Uncertainty avoidance	35%	2.415	.04
Ratios				
Ratio biomedical/psychosocial	Uncertainty avoidance	25%	2.004	.08
Ratio affective/instrumental	Individualism	37%	−2.510	.036

Table 6
Effects of culture dimensions on verbal behaviour of patients (stepwise regression).

Dependent variable	Effects	Adjusted R^2	t value	p-Value
Affective				
Social talk	Masculinity	26%	2.038	.076
Agreement	Individualism/collectivism	41%, step 1	2.801	.038
	Masculinity	73%, step 2	6.905	.001
	Power distance	90%, step 3	−5.221	.003
	Uncertainty avoidance	95%, step 4	2.487	.005
Rapport building	–			
Facilitation	Masculinity	31%	2.239	.055
Instrumental				
Asking questions	–			
Giving information	Masculinity	87%	−7.705	.000
Biomedical talk	Masculinity	65%	−4.201	.003
Psychosocial talk	–			
Ratios				
Ratio biomedical/psychosocial	–			
Ratio affective/instrumental	Masculinity	47%	−2.983	.018

Table 7
Effects of culture dimensions on the four main communication styles (stepwise regression).

Factors	Effects	Adjusted R^2	t value	p-Value
1. Fixed communication roles	Power distance	72%	4.874	.001
2. Biomedical information exchange	Masculinity	64%	−4.089	.003
3. Rapport building	Uncertainty avoidance	41%	−2.711	.027
4. Psychosocial information exchange	Wealth	25%, step 1	2.739	.029
	Uncertainty avoidance	44 %, step 2	1.952	.092

information exchange was also explained by uncertainty avoidance (step 2, up to 44%).

Countries' *masculinity* explained 64% of the *Biomedical information exchange* (and instrumental communication). The more feminine a country the more instrumental communication there was: there was a lot of question-asking, by both doctor and patient, and much biomedical information exchange. Accordingly, physicians were less satisfied with their jobs. These results on instrumental communication are contrary to our expectations: in masculine countries there is more affective communication than instrumental communication, and doctors seem to be more satisfied.

Psychosocial information exchange was explained by countries' *wealth* (step 1, 25%). The wealthier a country was, the more psychosocial issues were discussed, by both doctor and patient; patients had room to express their concerns and worries, and doctors were prone to take more risks. This effect was enhanced by the degree of uncertainty avoidance: the more uncertainty avoidance, the more psychosocial exchange of information. The expectation that in wealthier (individualistic) countries medical communication is characterized by more psychosocial talk is supported by this result.

4. Discussion and conclusion

4.1. Discussion

This study shows that cultural dimensions allow prediction of cross-national variation in medical communication at a country level. First, the dimension of power distance is, according our expectations, positively associated with fixed roles of physician and patient. In countries like Romania, Poland, Belgium and Spain, patients get what they expect, and these consultations are shorter than in low power distance countries (the five western European countries and Estonia). Second, these same countries, high on uncertainty avoidance, pay less attention to rapport-building, compared to Great Britain, Sweden and Estonia, while countries like Germany, the Netherlands and Switzerland are in-between. Third, the finding regarding high exchange of psychosocial information in individualistic countries was also according our expectations, even though countries' wealth overruled the individualism/collectivism dimension, and despite the contribution of level of uncertainty avoidance. As we have seen, there is a substantial correlation between individualism and national wealth. Former results [21] on the importance given to psychosocial issues in more modern (i.e. the more wealthy and individualistic) countries are confirmed. Fourth, the results on the masculinity dimension run contrary to expectations that GPs of the more masculine countries would express more of instrumental and biomedical talk [13,20]. Surprisingly, in the more feminine countries there is more biomedical talk, which goes hand in hand with a relatively more instrumental communication style. Countries like Sweden, the Netherlands and Estonia seem to be far more instrumental and biomedical than Switzerland, Germany, Great Britain, Poland or Belgium. One may argue that the more 'feminine' countries may have ample outlets for emotions, thereby rendering such interventions unnecessary in a medical situation. In 'masculine' countries there may not be such outlets, therefore they are necessary in a medical context. Another plausible explanation has to do with substantial changes in the organisation of primary care in recent decades. Dutch data show that there is a shift towards a more businesslike, task-oriented style in GP communication, with a greater focus on biomedical aspects and much less on psychosocial issues due to the recent emphasis on evidence-based medicine and protocollised care [41]. This is reflected in the data, at least for some countries.

Before drawing conclusions, additional theoretical and methodological comments need to be made. The Eurocommunication Study I showed that healthcare system characteristics at the macrolevel (GP as gatekeeper versus freely accessible specialist care; fixed patient lists; salaried employment versus self-employment; fee-for service payment system versus a capitation system or a mixed payment system) are less important than microlevel factors in explaining differences in doctor–patient communication. It was concluded that the relationship between macro and microlevel characteristics is more complicated than has been assumed [7]. The Eurocommunication Study II showed that the communication patterns in the new EU-countries Estonia, Poland and Romania partly differed from the old EU-countries (of the first study), but most differences did not occur along a new-old or east-west divide. It appears that the new EU-member states cannot be considered to constitute a group of countries with similar communication patterns, although their health care systems are rather similar and are in a process of transition from centralized state systems (Semashko model) to a Western model [10]. The present study shows that cultural norms, values, beliefs and attitudes towards health and health care may influence the communication between doctors and their patients too and, therefore, the quality of health care and the patients' health.

Regarding the culture dimensions of Hofstede, one may argue that the context and time period of their development were quite different, i.e. research on big company employees in a profit sector versus high-status health care professionals working on a small scale in the non-profit sector. As the theory on cultural differences claims to be applicable to all kinds of settings and groups of people, it is argued that the dimensions, containing the fundamental issues nations have to cope with, are applicable in these non-profit contexts as well. The results of the present study sustain this, as well as other research in the health care context, such as a study on subjective well-being compared across 35 countries [11]. Recent work [13,20] shows that, although changes take place over time, the features of countries in these cultural terms seem to be quite stable over time. This is confirmed in the present study, except for the masculinity dimension.

This study does not permit to draw conclusions on the behaviour of individual physicians or patients. Because the focus was on aggregated data at a national level, it allows making statements on differences at that level. When making statements regarding the many cross-national differences, one must also realise that there are large regional differences even within countries, such as the different linguistic provinces of Belgium or Switzerland [6]. Further, the number of cases (nations) was limited to 10, which is rather small. A larger sample would have made it possible to draw firmer conclusions.

4.2. Conclusion

Cultural dimensions like power distance, uncertainty avoidance, individualism and masculinity, together with countries' wealth, seem to be better and more nuanced predictors of cross-national differences in health care communication than explanations along the north–south or east–west division of Europe. National differences in communication styles found among the participating countries in this study will provoke reflections in these countries on the role of communication training in medical curricula from the viewpoint of cultural dimensions.

4.3. Practice implications

Increased knowledge of nations' cultural norms and values on medical communication may contribute to improved mutual understanding between European countries. The benefits may take place at medical encounter level, were the doctor–patient interaction takes place, as well as on macrolevel were negotiations occur towards striving for more effective cooperation and integration of European health care policies.

References

[1] Deveugele M, Derese A, de Bacquer D, van den Brink-Muinen A, Bensing J, de Maeseneer J. Is the communicative behavior of GPs during the consultation related to the diagnosis? A cross-sectional study in six European countries. Patient Educ Couns 2004;54:283–9.
[2] Migrant Health in Europe. Ethnicity & Health, 2004; 9:S1.
[3] Cooper LA, Roter DL, Johnson RL, Ford DE, Steinwachs DM, Powe NR. Patient-centered communication, ratings of care, and concordance of patient and physician race. Ann Intern Med 2003;139:907–15.
[4] Harmsen JAM. When cultures meet in medical practice [Dissertation]. Rotterdam: Erasmus University Rotterdam; 2003.
[5] Meeuwesen L, Harmsen H, Bernsen R, Bruijnzeels M. Do Dutch doctors communicate differently with immigrant patients than with Dutch patients? Soc Sci Med 2006;63:2407–17.
[6] Helman CG. Culture, health and illness, 4th ed., Oxford: Butterworth–Heinemann; 2001.
[7] van den Brink-Muinen A, Verhaak P, Bensing J, Bahrs O, Deveugele M, Gask L, Mead N, Leiva-Fernandes F, Perez A, Messerli V, Oppizzi L, Peltenburg M. The Eurocommunication study: an international comparative study in six European countries on doctor–patient communication in general practice. Utrecht: NIVEL; 1999.
[8] van den Brink-Muinen A, Verhaak P, Bensing J, Bahrs O, Deveugele M, Gask L, Leiva F, Mead N, Messerli V, Oppizzi L, Peltenburg M, Perez A. Doctor–patient communication in different European health care systems: relevance and performance from the patients' perspective. Patient Educ Couns 2000;39:115–27.
[9] Lueschen G, Stevens F, van der Zee J, Cockerham WC, Diederijks J, d'Houtaud A, Ferrando MG, Peeters R, Niemann S. Health care systems and the people: A five-nation study in the European Union. Int Sociol 1994;9:337–62.
[10] van den Brink-Muinen A, van Dulmen A, Bensing J, Maaroos H-I, Tähepöld H, Krol Z, Plawecki L, Oana S, Boros M, Sätterlund-Larsson U, Bengtsson B-M. Eurocommunication II. A comparative study between countries in Central-Europe and Western-Europe on doctor–patient communication in general practice. Utrecht: NIVEL; 2003.
[11] Arrindell WA, Hatzichristou C, Wensink J, Rosenberg E, van Twillert B, Stedema J, Meijer D. Dimensions of national culture as predictors of cross-national differences in subjective well-being. Pers Indiv 1997;23:37–53.
[12] Nisbett RE. The geography of thought: how Asians and westerners think differently—and why. London: Nicholas Brealey; 2003.
[13] Hofstede G. Culture's consequences: comparing values, behaviors, institutions, and organizations across nations, 2nd ed., Thousand Oaks: Sage; 2001.
[14] Triandis HC. Individualism and collectivism. Boulder, CO: Westview; 1995.
[15] Ohtaki S, Ohtaki T, Fetters MD. Doctor–patient communication: a comparison of the USA and Japan. Fam Pract 2003;20:276–82.
[16] Maclachlan M. Cultivating pluralism in health psychology. J Health Psychol 2000;5:373–82.
[17] Payer L. Medicine and culture: notions of health and sickness in Britain, the U.S., France and West Germany. London: Victor Gollancz; 1988.
[18] Shadid WA. Grondslagen van interculturele communicatie: Studieveld en werkterrein (Principles of intercultural communication). Bohn, Stafleu en Van Loghum: Houten/Diegem; 1998.
[19] Hofstede G. Culture's consequences: international differences in work-related values. Beverly Hills, CA: Sage; 1980.
[20] Hofstede G, Hofstede GJ. Cultures and organizations: software of the mind, [Revised and expanded 2nd edition], New York: McGraw-Hill; 2005.
[21] Märcker A. Association of cross-cultural differences in psychiatric morbidity with cultural values: a secondary data analysis. German J Psychiatry 2001;4:19–23.
[22] Boerma WGW, Fleming DM. The role of general practice in primary health care. WHO; 1998.
[23] Grol R, Whitfield M, de Maeseneer J, Mokkink H. Attitudes to risk taking in medical decision making among British, Dutch and Belgian general practitioners. Brit J Gen Pract 1990;40:134–6.
[24] Grol R, de Maeseneer J, Whitfield M, Mokkink H. Disease-centred versus patient-centred attitudes: comparison of general practitioners in Belgium, Britain and the Netherlands. Fam Pract 1990;7:100–3.
[25] Deveugele M, Derese A, van den Brink-Muinen A, Bensing J, de Maeseneer J. Consultation length in general practice: cross sectional study. Brit Med J 2002;325:472–4.
[26] Heszen-Klemens I, Lapinska E. Doctor–patient interaction, patients health behavior and effects of treatment. Soc Sci Med 1984;19:9–18.
[27] Bensing JM, Roter DL, Hulsman RL. Communication patterns of primary care physicians in the United States and the Netherlands. J Gen Intern Med 2003;18:335–42.

[28] Zola IK. Pathways to the doctor: from person to patient. Soc Sci Med 1974;7:677–89.
[29] Boerma WGW, Groenewegen PP, van der Zee J. General practice in urban and rural Europe: the range of curative services. Soc Sci Med 1998;47:445–53.
[30] World Bank Atlas; 2000: http://www.worldbank.org.
[31] Boerma WGW, van der Zee J, Fleming DM. Service profiles of general practitioners in Europe. Brit J Gen Practice 1997;47:481–6.
[32] Whitfield M, Grol R, Mokkink H. General practitioners opinions about their responsibility for medical tasks: comparison between England and the Netherlands. Fam Pract 1989;6:274–8.
[33] van Weel C, Konig-Zahn C, Touw-Otten F, van Nuijn NP, Meyboom-De Jong B. Measuring functional health status with the COOP/WONCA Charts: a manual. Wonca: ERGHO/NCH; 1995.
[34] Lamberts H, Wood M. International classification of primary care. Oxford: Oxford University Press; 1987.
[35] Sixma HJ, Kerssens JJ, van Kampen C, Peters L. Quality of care from the patients' perspective: from theoretical concept to a new measuring instrument. Health Expect 1998;1:82–95.
[36] Valori R, Woloshynowych M, Bellenger N, Aluvihare V, Salmon P. The patient requests form: a way of measuring what patients want from their general practitioner. J Psychosom Res 1996;40:87–94.
[37] Roter DL. The Roter method of interaction process analysis: RIAS manual. Baltimore: The John Hopkins University; 2001.
[38] Bales RF. Interaction process analysis. Cambridge: Addison-Wesley; 1950.
[39] Noldus LP, Trienes RJ, Hendriksen AH, Janden H, Jansen RG. The Observer Video-Pro: new software for the collection, management and presentation of time structured data from videotapes and digital media films. Behav Res Methods Instrum Comput 2000;32:197–206.
[40] Ong LML, Visser MRM, Kruyver IPM, Bensing JM, van den Brink-Muinen A, Stouthardt JML, Lammes FB, de Haes JCJM. The Roter interaction analysis system (RIAS) in oncological consultations: psychometric properties. Psychooncol 1998;7:387–401.
[41] Bensing J, Tromp F, van Dulmen S, van den Brink-Muinen A, Verheul W, Schellevis F. Shifts in doctor–patient communication between 1986 and 2002: a study of videotaped General practice consultations with hypertension patients. Fam Pract 2006;7:62–8.