

Students' attitudes towards learning communication skills: correlating attitudes, demographic and metacognitive variables

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Abstract

Objectives: This study aimed at exploring the relationship of students' attitudes towards learning communication skills to demographic variables, metacognitive skills, and to the appreciation of patient-oriented care.

Methods: The cross-sectional survey study involved first- and third-term students from two traditional and two problem-based curricula (N= 351). Demographic variables, attitudes towards communication skills learning, patient orientation, and awareness of learning strategies were assessed. Differences in attitude measures were assessed with t-tests and univariate comparisons. With multiple linear regressions predictor variables of students' attitudes towards communication skills learning and patient-oriented care were identified.

Results: A positive attitude towards learning communication skills was predicted by a caring patient orientation, self-regulation of learning strategies, and female gender

($R^2 = 0.23$; $F_{(9,310)} = 9.72$; $p < 0.001$). Students' caring patient orientation was predicted by their attitudes towards learning communication skills, female gender, and higher age ($R^2 = 0.23$; $F_{(9,307)} = 13.48$; $p < 0.001$). Students from a traditional curriculum were least interested in learning communication skills ($F_{(3,346)} = 26.75$; $p < 0.001$).

Conclusions: Students' attitudes towards learning communication skills and their caring patient orientation are interrelated. However, communication skills are considered as more positive by students with good self-regulatory skills. Early training of self-regulation and the training of communication skills in mixed-gender groups are recommended.

Keywords: Attitudes towards communication skills learning, patient orientation, problem-based learning, self-regulation

Introduction

From the beginning of medical studies, students should acquire patient-oriented attitudes and communication skills.^{1,2} This implies an interest in improving their personal communication competence.³ However, negative attitudes towards learning communication skills are common, as students do not recognize the training of communication skills as an important part of academic education and medical practice, or do not perceive a need to improve their own skills.⁴⁻⁸

Several variables are assumed to affect attitudes towards communication skills training, e.g. the appreciation of patient-oriented care.⁹ Problem-based curricula provide preferable contexts for acquiring patient-oriented compe-

tencies and a positive attitude towards doctor-patient communication.¹⁰⁻¹³ They involve interactive learning, contact with clinical contexts, and the integration of professional development training.^{1,14-18} Among personal variables, female students, in particular those with work experience in healthcare, express more interest in patient-oriented care, and in learning communication skills.^{19,20}

This study aimed at assessing the relationship of beginning medical students' attitudes towards communication skills training and towards patient-oriented care to demographic variables, awareness of learning strategies, and teaching approaches.

Assessing attitudes towards learning communication skills and towards patient-oriented care

Students' attitudes towards learning communication skills can be assessed with the "Communication Skills Attitude Scale" (CSAS).²¹ Attitudes towards learning communication skills correlate positively with female gender, personal experience within health service prior to medical studies, and parents' work outside the healthcare sector.^{7,19,22} Problem-based curricula and curricula that integrate the teaching of professional skills also foster a positive attitude.^{11,16} The relationship between attitudes towards communication skills learning, patient orientation, and self-regulation skills has not been studied.

Attitudes towards patient-oriented care can be assessed with the "Patient-Practitioner Orientation Scale" (PPOS), with the subscales "caring" and "sharing" patient orientation.⁹ "Caring" refers to the physician's focus on the patient's life situation, emotions, and personal views, and is regarded as a set of relatively stable cognitive beliefs.²⁰ The "sharing" dimension describes the physician's willingness to share medical information with the patient and to accept the patient as an equal partner.⁹ It is assumed to be related to sociocultural factors such as the tradition of paternalistic attitudes in care, and to the intensity or absence of communication skills training.^{10,23} On both scales, female students report more positive attitudes, in particular in combination with work experience in healthcare.^{9,10,20,24} Teaching methods that emphasize the value of patient-oriented care can enhance students' patient-centered orientation.^{12,25}

Assessing awareness of learning strategies

Communication skills are often taught in interactive group settings that involve practical training and critical reflection.²⁶ These complex learning processes demand students' awareness of their learning strategies, defined as the "ability to reflect, understand and control one's learning"²⁷, including cognitive activities like goal setting, planning, self-monitoring, self-evaluation, and reviewing of the learning content. Awareness of learning strategies can be assessed with the Metacognitive Awareness Inventory (MAI), which includes the "knowledge of cognition" and "regulation of cognition" scales.²⁷

Research questions

Students' negative beliefs about communication skills training call for exploration of variables that can foster a positive attitude towards learning doctor-patient communication. The study aimed at exploring a) the relationship of students' attitudes towards learning communication skills and towards patient-oriented care, and b) the relationship of attitudes towards communication skills learning and towards patient-oriented care to demographic variables, students' awareness of learning strategies, and the medical curriculum's teaching approach.

Method

Study design

A descriptive cross-sectional survey study, with the independent factor "medical school" (Witten/Herdecke, Linköping, Gothenburg, and Marburg), was applied. Four types of variables were assessed:

- demographic variables ("gender", "age", "personal working experience in health services prior to medical studies", and "parents working in health services")
- attitudes towards communication skills learning, Communication Skills Attitude Scale (CSAS)
- patient orientation, Patient-Practitioner-Orientation Scale (PPOS)
- awareness of learning strategies, Metacognitive Awareness Inventory (MAI)

While Swedish and German versions existed for the PPOS, the CSAS and MAI were translated into Swedish and German by a professional translator and native speakers, with the authors' permissions. This process included forward- and back-translation procedures that were applied to each statement and to the questionnaire as a whole. In total, the survey comprised 68 items. As all instruments had been used in earlier studies, no pilot study was performed.

Participating universities

Four medical programs were selected for the study – two applying problem-based teaching approaches and two with mixed teaching methods, located in Sweden and Germany, respectively. Swedish medical education comprises five and a half years of fulltime studies, while in Germany, medical studies span six years. In both countries, one academic term covers a half year.

1. The German Medical Faculty at the University of Witten/Herdecke applies a problem-based learning approach, including practical training and self-organized learning. Clinical communication skills are taught in a weekly longitudinal course from the first until the ninth study term. During the first two terms, theoretical basics are taught. From the third to the sixth term, students interview simulated patients, and receive feedback and reflection on their performance. Thus, first-term students who participated in the study had received one term of theoretical instruction, while students enrolled in the third term had their first contact with simulated patients.
2. The Faculty of Health Sciences of Linköping, Sweden, applies a problem-based curriculum. Communication skills are taught from the first until the fourth term, based on contact with real patients combined with video-based group supervisions. The contact with real patients starts in the middle of the first term, and course sessions take one afternoon every two weeks. Thus, although only students enrolled in the end of the first

study term could participate in this study, they had had their first theoretical and practical experience in interviewing patients.

3. Teaching methods at the Medical Faculty of the Philipps University of Marburg, Germany comprise lectures, seminars, and practical training, i.e. a traditional teaching approach. Communication skills can be practiced in an optional course for a limited number of students during the first two study terms. This includes two interviews with real patients in a general practitioner's practice. The interview experience is analyzed by the student in a written report.
4. The Sahlgrenska Institute at the Swedish University of Gothenburg, Sweden, applies mixed teaching methods including lectures, seminars, small group learning, and case discussions during the first study phase. During the first four study terms, students are instructed in professional training, but not trained in communication skills. The numbers of participants per school are presented in Table 1.

Data collection and ethical approval

After lectures, the questionnaires were distributed to students at the end of the first and third study terms, with one term comprising a half year. At Linköping University, only students from the end of the first study term could participate. The students were informed about the study's general aim and their participation was anonymous and voluntary. At all universities, permission for distributing the questionnaire was given by the faculties' deans. In accordance with Linköping University's research ethics representative, no ethical approval was applied for, as the Swedish act concerning the ethical review of research involving humans only applied to research dealing with sensitive personal data, or physical or psychological interventions.²⁸

Instruments

Communication Skills Attitude Scale (CSAS)

Attitudes towards learning communication skills were measured with the Communication Skills Attitude Scale (CSAS).²¹ The questionnaire comprises 26 statements, divided into two scales. The Positive Attitude Scale (PAS) refers to students' appreciation of communication skills as an academic subject, and to their beliefs about respect for the patients' rights and about the importance of communication with patients and colleagues. It contains 13 items (e.g. Item 4: "Developing my communication skills is just as important as developing my knowledge of medicine.", and Item 5: "Learning communication skills has helped me or will help me respect patients."). Responses are given on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Negative Attitude Scale (NAS) comprises 13 items that refer to negative aspects of communication skills instruction, e.g. Item 3: "Nobody is going

to fail their medical degree for having poor communication skills.", and Item 19: "I don't need good communication skills to be a doctor". In the study, the Positive Attitude Scale's internal consistency measured with Cronbach's alpha was 0.87, and the Negative Attitude Scale's Cronbach's alpha was 0.65. The questionnaire has been used in several studies including medical students.^{5,7,19,29}

Patient-Practitioner Orientation Scale (PPOS)

The Patient-Practitioner Orientation Scale assesses attitudes towards the doctor-patient relationship.^{9,30} It consists of 18 items on two subscales (PPOS "caring" and PPOS "sharing") with nine items each. The scoring is based on a six-point Likert scale ranging from "strongly disagree" (6) to "strongly agree" (1). As most items are negatively formulated, higher scores indicate a stronger patient orientation. The scale has been previously applied in Swedish and German research and was used with the author's permission. In this study, the inter-item reliability (Cronbach's alpha) of the "sharing" scale was 0.62, and 0.58 for the "caring" scale. The scale has been used in several studies involving medical students.^{9,20,24}

Metacognitive Awareness Inventory (MAI)

Students' awareness of their personal learning strategies was assessed with the Metacognitive Awareness Inventory (MAI), which includes the "knowledge of cognition" and "regulation of cognition" scales with internal consistency measures (Cronbach's alpha) varying between 0.84 and 0.94.^{27,31,32} "Knowledge of cognition" refers to a person's awareness of her learning strategies, e.g. "I can motivate myself to learn when I need to.". A sample item for "regulation of cognition" that describes a person's ability to control her learning activities, is "I ask myself how well I accomplished my goals once I'm finished." The original version of this self-report instrument contains 52 statements that are answered on a five-point Likert scale from "not true of me" (1) to "very true of me" (5) (without reversely scored items). It is a valid and reliable measure of metacognitive awareness related to academic learning tasks.³³ In the study, a shortened form with 20 items was used (10 items for each scale), the same that had been applied in an earlier study that found an acceptable internal consistency (Cronbach's alpha for "knowledge of cognition" 0.79 and for "regulation of cognition" 0.84).³⁴ In this study, internal consistency (Cronbach's alpha) for "knowledge of cognition" was 0.61, and for "regulation of cognition" was 0.77. These moderate internal consistencies – that which may result from the reduced item number – and the fact that the factor solution of the shortened version was not explored are weak points in the use of the MAI.

Analysis

Distributions of demographic variables were compared with Chi-square tests. Differences in attitude measures per

demographic variables were assessed with t-tests for independent groups. Between medical schools, attitude measures were compared with one-way analyses of variance (ANOVA) with post-hoc comparisons (Scheffé procedure and Games-Howell for unequal variances). Finally, predictor variables for the attitude measures (attitude towards communication skills learning, and patient orientation) were identified with multiple linear regressions. A p-level <0.005 was considered as significant. For MAI scores, no descriptive statistics and comparisons were reported, as these are presented elsewhere.³⁵ Students who did not report demographic variables were omitted from the respective analyses.

Results

Participants and response rates

Due to different class sizes and accessibility, the number of students per medical school varied. As participation was voluntary, it can be assumed that it was mainly students who were interested in the study who filled in the survey. However, this bias should apply to all samples and not limit their comparability. No data were available about the non-responders' demographic variables. The response rates were calculated in relation to the total number of students per term (not in relation to students attending the lecture), which may not reflect the actual ratio of participating students. All response rates per medical school are presented in Table 1.

Mean comparisons

Distribution of demographic variables

Chi-square tests revealed that demographic variables varied significantly between medical schools. In Witten/Herdecke, the highest proportion of female students was enrolled (73%, n = 63), while mostly male students studied in Linköping (44%, n=25). From Linköping and Marburg, the highest proportions of students between 20 and 23 years participated (Linköping 80%, n = 25; Marburg 76%, n = 175). Students from Witten/Herdecke reported the most individual work experience in healthcare (90%, n = 62), and German students' parents were less often occupied in the health sector than Swedish students' parents (Marburg 31%, n = 175; Witten/Herdecke 37%, n = 63). All descriptive statistics of demographic background variables and significances are presented in Table 1.

Demographic variables and attitude scores

Female students were more positive towards learning communication skills than male students. They scored significantly higher on the PAS ($t_{(341)} = 3.336$; $p = 0.001$; $d = 0.37$), and lower on the NAS ($t_{(336)} = -4.91$; $p = 0.000$; $d = 0.57$). Female students were also more positive towards patient-oriented care than male students, indicated by their higher scores on both subscales of the Patient-Practitioner-Orientation Scale (PPOS) sharing ($t_{(343)} = 4.02$; $p = 0.000$; $d = 0.44$), PPOS caring ($t_{(345)} = 4.36$; $p = 0.000$; $d = 0.49$). Older students were more positive towards a caring patient

Table 1. Response rates, descriptive statistics, and Chi square tests of demographic variables per medical school (N= 360)

Variable		Witten/Herdecke, Germany	Linköping, Sweden	Marburg, Germany	Gothenburg, Sweden	Pearson's Chi square	df	Significance two-sided
N		62	25	175	98			
Response rate		63%	50%	60%	60%			
Teaching method		Problem-based learning	Problem-based	Mixed methods	Mixed methods			
Communication skills instruction, term 1-3		Patient contact and theoretical instruction	Patient contact and group supervision	Elective patient contact	Professional training, not communication			
Gender	female	45 (73%)	11 (44%)	93 (54%)	61 (63%)	9.782	3	0.021*
	male	17 (27%)	14 (56%)	79 (46%)	36 (37%)			
Age	<20-23y	39 (63%)	20 (80%)	130 (76%)	59 (61%)	8.848	3	0.031*
	24-35+y	23 (37%)	5 (20%)	42 (24%)	38 (39%)			
Personal work experience in healthcare	No	6 (10%)	13 (52%)	61 (36%)	48 (49%)	29.625	3	0.000**
	Yes	56 (90%)	12 (48%)	110 (64%)	49 (51%)			
Parents' work in healthcare	No	45 (73%)	13 (52%)	118 (69%)	53 (55%)	8.596	3	0.035*
	Yes	17 (37%)	12 (48%)	54 (31%)	43 (45%)			

*p <0.05, **p<0.001

orientation than their younger peers ($t_{(345)} = -2.64$; $p = 0.009$; $d=0.28$). Students with work experience in healthcare

reported a more positive patient orientation than students without work experience (PPOS caring $t_{(345)} = -2.15$; $p=0.032$

d = 0.24), PPOS sharing ($t_{(342)} = -2.42$; $p = 0.016$; $d = 0.26$). All means and standard deviations are presented in Table 2.

Table 2. Mean and standard deviation of demographic variables for CSAS and PPOS measures (N = 360)

Variable	Positive Attitude Scale (PAS)	Negative Attitude Scale (NAS)	PPOS caring	PPOS sharing
Gender				
Female	3.85 (0.51)	2.10 (0.39)	4.34 (0.50)	4.54 (0.48)
Male	3.65 (0.57)	2.38 (0.59)	4.11 (0.55)	4.28 (0.58)
Age				
<20-23 years	3.75 (0.55)	2.23 (0.50)	4.22 (0.53)	4.39 (0.52)
24-35+ years	3.82 (0.53)	2.19 (0.48)	4.29 (0.53)	4.55 (0.55)
Personal work experience in healthcare				
No	3.74 (0.58)	2.23 (0.43)	4.15 (0.57)	4.35 (0.55)
Yes	3.79 (0.53)	2.11 (0.53)	4.29 (0.51)	4.48 (0.52)
Parents' work in healthcare				
No	3.77 (0.56)	2.22 (0.52)	4.27 (0.54)	4.48 (0.55)
Yes	3.76 (0.53)	2.21 (0.45)	4.19 (0.51)	4.36 (0.51)

Attitudes and medical schools

One-way ANOVAs with the factor “medical school” revealed significant differences on the dependent variables PAS ($F_{(3, 346)} = 27.38$; $p < 0.000$), NAS ($F_{(3, 341)} = 10.79$; $p < 0.000$), and PPOS “sharing” ($F_{(3, 346)} = 2.77$; $p = 0.041$). Post-hoc tests between medical schools – using the Scheffé procedure and the Games-Howell test in case of unequal variances – showed that students from the German school with traditional teaching methods at Marburg were significantly less positive towards learning communication skills than students from Witten/Herdecke (PAS: mean difference 0.49; SE = 0.07; $p < 0.001$), from Linköping (PAS: mean difference 0.46; SE = 0.09; $p < 0.001$), and Gothenburg (PAS: mean difference 0.47; SE = 0.06; $p < 0.001$). Accordingly, students from Marburg reported higher NAS scores than students from Witten/Herdecke (NAS: mean difference 0.30, SE = 0.07; $p < 0.001$), Linköping (NAS: mean difference 0.34; SE = 0.08; $p = 0.001$), and Gothenburg (NAS: mean difference 0.27; SE = 0.06; $p < 0.001$). Students enrolled in Witten/Herdecke were significantly more positive towards sharing information and power with their patients compared to students from Linköping (PPOS sharing: mean difference 0.35; SE = 0.13; $p < 0.041$). Descriptive statistics are presented in Table 3.

Multiple linear regressions of attitude measures

In multiple linear regression models, predictor variables of the attitude measures (PAS, NAS, PPOS caring and sharing) were identified. While both attitude concepts were interre-

lated, a difference was that self-regulation skills were relevant for students' attitudes towards communication skills training, while age and work experience accounted for patient-oriented attitudes. Twenty-three percent of the PAS scores could be explained by PPOS “caring” scores and “regulation of cognition” scores ($R^2 = 0.23$, $F_{(9,310)} = 9.72$; $p < 0.001$). This means that a positive attitude towards communication skills learning correlated with students' caring orientation, and with their self-regulatory control of learning strategies. Accordingly, negative attitudes towards communication skills learning were predicted by a low caring attitude (PPOS caring), male gender, and low self-regulation skills ($R^2 = 0.22$; $F_{(9,306)} = 9.03$; $p < 0.001$). A caring patient orientation was predicted by multiple variables. These were a positive attitude towards communication skills learning, female gender, a low negative attitude towards communication skills learning, higher age, and parents who did not work in healthcare ($R^2 = 0.28$; $F_{(9,307)} = 13.48$; $p < 0.001$). Finally, predictor variables of a sharing patient orientation (PPOS “sharing”) were female gender, low NAS scores, and personal work experience in healthcare ($R^2 = 0.12$; $F_{(9,306)} = 4.97$; $p < 0.001$).

Discussion

Principal findings

Students' positive attitudes towards learning communication skills were related to a caring patient orientation and to good self-regulation of learning strategies. A caring patient orientation, in contrast, did not depend on metacognitive abilities, but was explained by a positive attitude towards communication skills learning, female gender, higher age, and parents' work outside the health sector. Students who were positive towards sharing information and power with their patients had a low negative attitude towards the training of communication skills, female gender, and personal work in healthcare. Female students were more positive than male students towards both attitude concepts. The comparison of medical curricula revealed that students enrolled in the German school with traditional teaching methods were less interested in learning communication skills than students from other schools, and students from the German problem-based school were more positive towards sharing information and power than students from the Swedish problem-based school.

Attitude towards learning communication skills

The study reproduced the gender effect known from earlier research, i.e. female students were more positive towards communication skills training than their male peers.^{7,19} This is often explained by female students' stronger openness towards information-giving, partnership-building, and interest in psychosocial topics. Male students are considered to be slower in learning communication skills.³⁶ In contrast to findings of other studies, no correlation with students'

age or work experience was found. The strongest relationship was observed to students' caring patient orientation, which may reflect the similarity of the concepts. However, those students who claimed to possess good self-regulation skills tended to appreciate communication training. These were not relevant for students' patient orientation. This finding may indicate that beginning students are aware of the complex learning processes that are required for improving their communication behavior, e.g. critical self-observation and adjustment to peer students' and supervisors' comments.^{26,37} The importance of the ability to adjust one's learning behavior to situational demands is in line with a study that found that students who felt less nervous than their peers and were confident in their skills of listening to patients showed more improvement in their communication skills over time.¹⁷

Table 3. Mean, standard deviation and confidence intervals of CSAS, and PPOS scores per medical school (N = 360)

Attitude measures	Germany/Sweden	Mean	SD	Confidence Interval 95%	
				Lower	Upper
PAS	Witten/Herdecke	4.01	0.41	3.81	4.15
	Linköping	3.98	0.40	3.81	4.15
	Marburg	3.52	0.54	3.91	4.15
	Gothenburg	3.99	0.46	3.89	4.08
NAS	Witten/Herdecke	2.07	0.42	1.96	2.17
	Linköping	2.03	0.34	1.89	2.17
	Marburg	2.37	0.56	2.28	2.45
	Gothenburg	2.10	0.36	2.03	2.18
PPOS caring	Witten/Herdecke	4.56	0.53	4.43	4.69
	Linköping	4.38	0.38	4.22	4.54
	Marburg	4.39	0.53	4.30	4.47
	Gothenburg	4.47	0.58	4.35	4.58
PPOS sharing	Witten/Herdecke	4.38	0.49	4.25	4.49
	Linköping	4.03	0.55	3.80	4.25
	Marburg	4.24	0.51	4.16	4.32
	Gothenburg	4.22	0.57	4.10	4.34

Possibly, a barrier to effective communication training is a lack of metacognitive strategies for complex learning situations. Consequently, students should be prepared for coping with the learning requirements of communication skills training.

In this study, students from the German traditional curriculum at Marburg were less interested in learning communication skills than students from other schools. This result may reflect their lack of experience with communication skills training, as this was only offered to a limited number of students. Moreover, a high proportion of male students (who tend to express a more negative attitude) were enrolled in Marburg. However, their level of patient orientation was similar to all other schools. As reported elsewhere, students from Marburg did not differ in their self-regulatory control of learning strategies from students from the other schools.³⁵

In this study, the internal consistency of the NAS scale was somewhat low, which might indicate that the items do not refer to a homogeneous concept. However, differences between medical schools were also found on the PAS, which had a sufficient internal consistency.

Patient orientation

In line with earlier studies, female students reported a stronger caring patient orientation than male students.^{9,20} In line with a recent study, a positive caring attitude also correlated with age over 23 years, and work experience in the healthcare sector, which might, however, be confounded variables.²⁰ Between medical schools no differences were found on the caring dimension, which supports the assumption that this scale represents generally acknowledged beliefs about the patient-physician relationship. Female students and students over 23 years were also more positive towards sharing information and power with their patients, i.e. respecting them as equal partners.

While students from the programs with traditional teaching methods (Marburg and Gothenburg) reported similar sharing attitudes, students from Witten/Herdecke had a more positive sharing orientation than students from Linköping. This effect cannot be explained with the programs' teaching approaches, as both apply problem-based curricula. Students from Witten/Herdecke probably preferred a sharing orientation due to their personal work experience within healthcare, which 90% from Witten/Herdecke reported. Their practice experience may have increased their appreciation of a trustful doctor-patient relationship for clinical practice, and promote their awareness for and use of effective, goal-oriented learning strategies.³⁸ The role of sociocultural aspects such as the structure of healthcare for this result remains speculative.^{23,39} The German healthcare system is mainly based on private practitioners that are chosen by the patients, while Swedish healthcare is provided as a public service. This leaves less choice options for patients and may motivate practitioners less to share power with their patients.

Implications for teaching practice

It appears reasonable to assess and to foster students' self-regulatory control of learning strategies at an early stage of communication skills instruction. Courses should illuminate the learning processes that are necessary for communication skills training, e.g. the formulation and reception of feedback and critical comments to interview performance. As suggested elsewhere, small student groups should aim at benefitting from female students' general tendency to be more patient-oriented by using mixed gender groups.²⁰ Teachers and facilitators should focus on identifying students who struggle with adopting patient-centered attitudes and skills. Assigning more curriculum time, as well as financial and personal resources to the training of com-

munication skills could emphasize their importance in the students' perception.⁴⁰

Implications for further research

The impact of students' learning strategies on the development of patient-centered skills needs to be further explored. Longitudinal and qualitative designs such as focus groups, observations, or interviews can identify further variables that affect students' attitudes and motivation. The role of teaching methods in students' formation of attitudes also needs to be further explored, even if this is not easy to operationalize. Concerning the readiness to treat patients as equal partners, studies might focus on specific issues that may be susceptible to sociocultural factors, e.g. how informed consent is understood and realized in different contexts.

Comments on methods

The number of participants from each medical school varied, as class sizes were smaller in problem-based programs compared to mixed programs, and smaller in Sweden than in Germany. From Linköping, only students enrolled in the first term could participate, due to administrative problems. The generalizability of the results is limited, as the participating medical schools were not representative. The study of attitudes entails specific problems. Self-report instruments concerning learning strategies are afflicted with calibration difficulties, as they reflect students' personal perceptions and not their abilities or actual use. This can result in overestimation or underestimation effects. Attitudes towards communication training do not allow conclusions about communication performance.¹⁷ However, the assessment of attitudes towards patient-oriented care has its legitimation, as they refer to beliefs that are relatively stable over time.²⁰

Conclusion

The study showed that students' attitudes towards communication skills learning are related to their patient orientation, in particular towards a caring orientation. Additionally, students' attitude towards communication skills learning is predicted by self-regulatory control of learning strategies. Observed differences between medical schools were not easy to interpret. For educational practice, the study suggests that the early study phase should aim at preparing students' self-regulatory learning skills. Male students' readiness to improve their communication behavior may be fostered by using mixed gender groups.

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formed about the study aims and had given their informed consent to participate.

Conflict of Interest

The author declares that she has no conflict of interest.

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