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Influence of gender of the teaching staff on students' acceptance of a virtual implant planning course

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ABSTRACT

Acceptance of new technology is influenced by a number of situational and social factors. So far, only limited data are available on the influence of the teaching staff's gender on the acceptance of virtual dental implant planning by students. This study aimed at assessing the influence of the teaching staff's gender on the acceptance of a virtual implant planning course by male and female undergraduate dental students and their general attitude toward implantology.

Two groups of third-year dental students (group 1, 9 males, 22 females; group 2, 12 males, 20 females) attended a virtual dental implant planning course. For the first group the teaching staff was all-male, while the teaching staff was all-female for the second group. After completion of the course the students filled in a technology acceptance questionnaire.

An all-female teaching staff led to a degree of technology acceptance that did not differ significantly for male and female students. When the teaching staff was all-male, significant differences for technology acceptance occurred between male and female students.

However, male as well as female students attributed the practice of implantology to both genders of dentists, equally, without statistically significant difference independent of the gender of the teaching staff.

The more evenly distributed degree of technology acceptance of students of both genders being taught by a female staff is a favorable effect which may be explained by the more egalitarian style of women. Therefore, while feminization in dentistry proceeds, adequate measures should be taken to increase the number of female teachers.

1. Background

In medicine it is a well-known fact that some specialties are more attractive to female doctors than male doctors and vice versa. Female doctors seem to prefer conservative specialties over surgical ones (Harris et al., 2005). Gender differences in medical specialty choice have been explained to some extent as a function of socialization (Buddeberg-Fischer et al., 2006). As a general principle, gender concordance seems to be an important factor for building trust and communication (Cooper-Patrick et al., 1999). It is used as an explanation for the fact that in a lot of fields of medical education there is a preference of female learners for female teachers, while male learners prefer male teachers (McOwen et al., 2007).

Experiences of students are important factors when career choices have to be made (O'Herrin et al., 2004). These experiences include exposure to a particular specialty and positive role models. Women are a minority as far as dental faculty positions are concerned (McKay and Quiñonez, 2012; Nkenke et al., 2015). Therefore, there is a risk of a lack of female role models during education in the different fields of dentistry. Consequently, it is not surprising that as far as implantology is concerned, it has been shown that female

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dentists are significantly more likely to refer implant cases to specialists instead of treating them by themselves compared to their male counterparts (Atchison et al., 2002). Women still are underrepresented in implantology, although the number of female dental students and female dentists has increased significantly over the past decades (Adams, 2005; Valachovic et al., 2001). With the increasing feminization of dentistry there is an increasing need for female dentists who specialize in dental implantology in order to secure adequate patient care. Efforts have to be made to address this aspect in the curriculum. It has to be kept in mind that although women will comprise the majority of the medical workforce in a few years, currently only 9% of the doctors who work in the field of surgery are women (Crolla et al., 2011).

So far, there is only limited knowledge on the relevance of the teaching staff's gender in dental education. In order to highlight this aspect, the field of virtual dental implant planning was chosen. The study aimed at assessing the influence of the teaching staff's gender on the acceptance of a virtual implant planning course by male and female undergraduate dental students and their general attitude toward implantology.

2. Materials and methods

The study was approved by the institutional ethics committee (approval no.: ECS, 2065/2015). Two cohorts of third-year dental students were eligible for participation in the study. They were scheduled for a virtual implant planning course in 2012 and 2013, respectively. Each student who wanted to participate had to give his or her informed consent. The courses were delivered as 14 face-to-face lectures of 45 min duration and a hands-on training of 10 h duration. There was a detailed outline of the learning content that had to be taught by the staff. Identical slides were used during the 2 courses. The aim was to secure that both cohorts of students received the same knowledge.

The hands-on training was carried out with 2 different virtual implant planning software systems (coDiagnostiX, Straumann GmbH, Freiburg, Germany; ExpertEase, Dentsply IH GmbH, Mannheim, Germany) on personal computers. Planning was performed on computed tomography data sets of real patients. Each student performed virtual implant planning for 2 cases of partially dentate and edentulous patients each using the 2 different planning systems assisted by the teaching staff. For each of the 2 planning situations optimal implant positions had been determined by an interdisciplinary team of experienced prosthodontists and oral and maxillofacial surgeons. The teaching staff members were familiar with these plannings. Each virtual implant planning done by the students was checked by the teaching staff. Advice was given to correct for or to avoid mistakes.

In an additional step, the students had the chance to place dental implant dummies in plastic jaw models using duplicates of CAD/CAM surgical templates where the master template had been initially fabricated based on virtual planning data. Finally, the students fixed duplicates of prefabricated prostheses on the implant dummies. The teaching staff gave a stepwise demonstration of the procedures and, later on, checked the proper positioning of the templates on the jaw models, the correct implant placement and the exact connection of the prostheses to the implants.

For the first cohort of students the teaching staff was all-male, while it was all-female for the second cohort. Each teaching staff consisted of certified implantologists with at least 5 years' experience in implant dentistry including virtual implant planning, a certification of formal education in didactics of 20 h and experience in teaching in dentistry of at least 5 years. Teachers as well as learners were informed on the evaluations of the course by the students with questionnaires but were unaware of the actual intervention with all-male and all-female teaching staffs.

For the evaluation of the acceptance of the virtual implant planning, a questionnaire was adopted that had been used previously (Nkenke et al., 2012b). One part of the questionnaire was

Table 1
Items of the technology acceptance questionnaire.

Construct	Number of item	Measurement items
Perceived usefulness	1	Implant planning software enables me to accomplish tasks more quickly.
	2	Implant planning software has improved my quality of work.
	3	Implant planning software makes it easier to do my job.
	4	Implant planning software has improved my productivity.
	5	Implant planning software gives me greater control over my job.
	6	Implant planning software enhances my effectiveness on the job.
Perceived ease of use	7	My interaction with the different implant planning software tools has been clear and understandable.
	8	Overall, the implant planning software tools are easy to use.
	9	Learning to operate implant planning software was easy for me.
	10	I rarely become confused when I use implant planning software.
	11	I rarely make errors when using implant planning software.
	12	I am rarely frustrated when using implant planning software.
Perceived behavioral control	13	I am able to confidently use implant planning software.
	14	I have the knowledge to use implant planning software.
	15	I have the resources to use implant planning software.
	16	I have the ability to use implant planning software.
	17	I have control over using implant planning software.
Subjective norm	18	People who influence my behavior think I should use implant planning software.
	19	People who are important to me think I should use implant planning software.
	20	My immediate supervisor thinks I should use implant planning software.
	21	My close friends think I should use the implant planning system.
	22	My peers think I should use the implant planning system.
	23	People whose opinions I value prefer that I use implant planning software to perform my job.
Attitude	24	Using implant planning software is a good idea.
	25	Using implant planning software is pleasant.
	26	Using implant planning software is beneficial to patient care.
Behavioral intention	27	I intend to continue using implant planning software to perform my job.
	28	I intend to frequently use implant planning software to perform my job.

The items were measured on a 6-point Likert scale ranging from 1 (“I totally disagree“) to 6 (“I totally agree“).

Table 2
Definitions of the different constructs included in the technology acceptance questionnaire.

Construct	Definition
Perceived usefulness (PU)	Extent to which a student believes the software will improve his or her ability to perform dental implant planning
Perceived ease of use (PEU)	Extent to which a student believes using the dental implant planning software will improve his or her performance
Perceived behavioral control (PBC)	Students' beliefs about the presence or absence of requisite resources and opportunities that influence using the implant planning software
Subjective norm (SN)	Students' perception of what other people, who are important to them, feel about adopting the dental implant planning software
Attitude (A)	Students' positive and negative feelings using the dental implant planning software
Behavioral intention (intention to use, BI)	Students' beliefs about expected utilization of the dental implant planning system

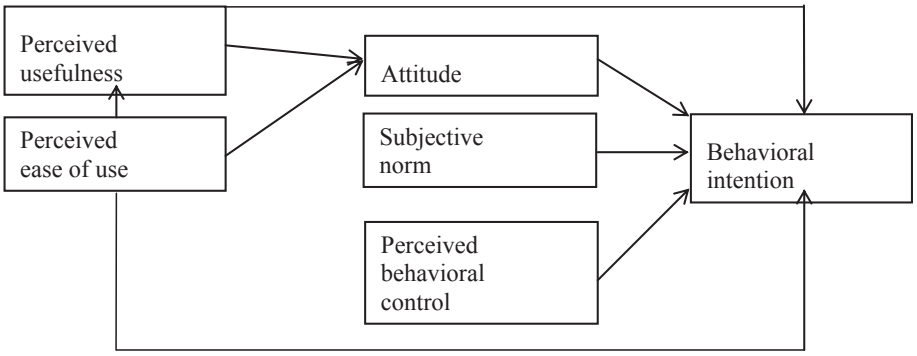

Fig. 1. Path model for technology acceptance constructs as described by Nkenke et al. (2012a).

adapted from the technology acceptance model (TAM) and the theory of planned behavior (TPB; Chau and Hu, 2002). It was based on the combined TAM and TPB (C-TAM-TPB) and consisted of 28 items, which are given in Table 1. The subscales i) perceived usefulness (PU), ii) perceived ease of use (PEU), iii) perceived behavioral control (PBC), iv) subjective norm (SN), v) attitude (A), and vi) behavioral intention (intention to use, BI) were included. The definitions of the 6 constructs are given in Table 2. In technology acceptance models, perceived ease of use, subjective norm, and perceived behavioral control are independent constructs. Perceived usefulness and attitude are mediating constructs. Both constructs are dependent on perceived ease of use. Behavioral intention is a dependent construct. It is dependent on perceived usefulness, attitude, subjective norm, and perceived behavioral control. The interrelations between the different constructs have been described in a path model, previously (Fig. 1) (Nkenke et al., 2012b).

The second part of the questionnaire included 11 additional items that especially asked for the students' attitudes toward gender issues (Table 3).

All items were measured on a 6-point Likert scale ranging from 1 ("I totally disagree") to 6 ("I totally agree").

After the completion of the course the participants of the study were asked to fill in the questionnaire. Participation was voluntary. Demographic data of the participants was obtained. The questionnaires were analyzed for male and female students, separately.

Statistical analysis

Mean values and standard deviations are given for the results of the questionnaires and the demographic data. The binomial distribution was used to calculate if there was a significant difference in gender distribution within each of the 2 cohorts of students. The Kruskal–Wallis test was adopted to assess if there was a statistical difference in age between female and male students within and between the 2 cohorts.

For the 2 cohorts of students Cronbach's α analysis was carried out to assess the reliability of the technology acceptance questionnaire. Cronbach's α coefficients were calculated for the different constructs. Cronbach's α-values of .7 or higher are in the acceptable range recommended by the literature (Schmitt, 1996). These values indicate that items are measuring the same concept. Alpha values above .8 reflect a high reliability.

P-values less than or equal to .05 were considered significant. All calculations were done using IBM SPSS statistics 20 (IBM, Armonk, NY, U.S.A.).

3. Results

All students of both cohorts consented to participation in the study. The male teaching staff cohort consisted of 32 students (20

Table 3
Questionnaire with items on gender aspects.

Number of item	Measurement items
1	I prefer a female teaching staff.
2	I prefer a male teaching staff.
3	Dental implantology is performed by males, predominantly.
4	Dental implantology is performed by females, predominantly.
5	Female and male students are treated equally during undergraduate dental education.
6	The dentist's gender is relevant for his or her professional focus (e.g. endodontics, prosthodontics, implantology, etc.).
7	The teaching staff was competent.
8	There is a positive discrimination of male students during undergraduate dental education.
9	There is a positive discrimination of female students during undergraduate dental education.
10	The more I increase my theoretical knowledge, the more confident I feel in dental implantology.
11	Compared to my fellow students I have more pronounced practical skills.

The items were measured on a 6-point Likert scale ranging from 1 ("I totally disagree") to 6 ("I totally agree").

Table 4
Age of the members of the different groups (group 1 vs. group 3, $p = .645$; group 2 vs. group 4, $p = .821$).

Group	Age (years)	p
Group 1 (n = 12)	25.2 ± 2.4	.099
Group 2 (n = 20)	23.9 ± 2.1	
Group 3 (n = 9)	24.8 ± 2.9	.372
Group 4 (n = 22)	23.5 ± 1.9	

Group 1, male students/male teachers; group 2, female students/male teachers; group 3, male students/female teachers; group 4, female students/female teachers. n, number of students.

female, 12 male), the female teaching staff cohort of 31 students (22 female, 9 male). All 63 questionnaires were filled in completely and could be used for data analysis.

Both cohorts consisted of significantly more female than male students (male teaching staff group, $p = .048$; female teaching staff group, $p = .015$). The distribution of male and female students did not differ statistically significantly for the 2 cohorts ($p < .0005$). There was no statistically significant difference as far as the age of female and male students was concerned (Table 4).

The results for the different items are given in Tables 5–8. Cronbach's α exceeded .7 for all technology acceptance constructs and the additional 11 items on gender aspects. For the constructs perceived usefulness and perceived ease of use no statistically significant differences could be found between all of the different pairs of students and teachers (Tables 5 and 6).

For the construct perceived behavioral control one statistically significant difference was identified. Being taught by a male staff, male students were significantly more convinced that they had the necessary theoretical knowledge to use virtual implant planning software compared to female students (item 14, Tables 5 and 6). For the construct subjective norm 2 statistically significant differences could be found between different student/teacher dyads. Male students were significantly more convinced that people who were important to them would like to see them using virtual implant planning software when the teaching staff was male compared to female students (item 19, Tables 5 and 6). With a male teaching staff male students were significantly more convinced that their fellow students would like to see them using virtual implant planning systems compared to female students (item 22, Tables 5 and 6). The construct attitude did not show statistically significant differences between the different groups. For the construct behavioral intention one statistically significant difference between the different dyads of students and teachers could be found. With a female teaching staff, the intention of male students to use virtual implant planning during their professional career was significantly increased compared to the situation when the teaching staff was male (item 27, Tables 5 and 6). For all constructs no statistically significant differences could be found between male and female students when the teaching staff was all-female, as far as the technology acceptance questionnaire was concerned (Tables 5 and 6).

For the items of the questionnaire on gender aspects, 3 statistically significant differences between male and female students could be identified when the teaching staff was male. Under these circumstances, male students were significantly more convinced that they preferred female teachers compared to female students (item 1, Tables 7 and 8). When the teaching staff was male, female students were convinced that there was a positive discrimination of male students in their dental school (item 8, Tables 7 and 8). Male students did not share this conviction. The difference between the 2 groups was statistically significant. When the teaching staff was male, both genders did not identify a positive discrimination of female students (item 9, Tables 7 and 8). However, female students rejected the assumption of a positive discrimination of female students significantly more strongly than their male counterparts.

Table 5
Results of the technology acceptance questionnaire.

Construct	Number of item	Group 1 (n = 12)	Group 2 (n = 20)	Group 3 (n = 9)	Group 4 (n = 22)
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Perceived usefulness	1	4.5 (1.0)	5.2 (.8)	5.0 (1.1)	4.9 (1.3)
	2	4.8 (.9)	5.2 (.6)	5.4 (.7)	5.0 (1.0)
	3	4.5 (.7)	5.2 (.8)	5.0 (1.5)	4.8 (.9)
	4	4.7 (.7)	5.0 (1.0)	4.7 (1.2)	4.5 (1.0)
	5	4.5 (1.1)	5.1 (.7)	5.1 (.8)	4.5 (1.1)
	6	4.5 (.8)	4.2 (1.1)	4.7 (1.4)	4.6 (1.4)
Perceived ease of use	7	4.2 (.7)	4.6 (1.1)	4.0 (1.2)	4.3 (1.0)
	8	4.3 (.9)	4.6 (1.3)	4.0 (.7)	4.0 (1.3)
	9	4.8 (.5)	4.3 (1.3)	4.1 (.8)	4.0 (1.2)
	10	4.2 (1.3)	3.6 (1.2)	4.0 (1.6)	4.1 (1.0)
	11	3.7 (.9)	4.1 (1.4)	3.7 (1.5)	3.9 (1.3)
	12	4.0 (1.0)	3.7 (1.0)	4.1 (1.4)	4.3 (.9)
Perceived behavioral control	13	4.4 (1.2)	3.7 (1.0)	4.3 (1.2)	3.7 (1.3)
	14	5.0 (1.0)	4.1 (1.3)	3.8 (1.3)	3.6 (1.3)
	15	4.3 (.8)	4.6 (1.7)	4.7 (1.7)	4.9 (1.4)
	16	4.5 (.9)	4.6 (1.0)	4.2 (1.5)	3.7 (1.5)
	17	4.8 (1.1)	4.1 (1.3)	4.9 (1.1)	4.5 (1.3)
Subjective norm	18	3.7 (1.1)	4.1 (1.1)	4.0 (1.7)	3.8 (1.4)
	19	5.2 (.7)	3.8 (1.4)	3.7 (1.7)	3.6 (1.6)
	20	4.2 (1.3)	4.3 (1.4)	5.2 (.8)	4.8 (1.1)
	21	4.1 (1.3)	4.8 (1.0)	3.9 (1.4)	3.7 (1.5)
	22	5.4 (1.4)	3.9 (1.3)	4.1 (1.1)	3.9 (1.5)
	23	3.9 (1.3)	3.9 (.6)	3.8 (1.4)	3.6 (1.4)
Attitude	24	4.7 (1.3)	5.5 (.5)	5.4 (1.3)	5.3 (.9)
	25	4.6 (1.4)	5.2 (1.1)	5.2 (1.1)	5.1 (1.1)
	26	4.7 (1.2)	5.4 (.7)	5.4 (1.1)	5.5 (.7)
Behavioral intention	27	4.6 (1.3)	5.6 (.6)	5.7 (.7)	5.5 (.7)
	28	4.4 (1.2)	5.2 (.7)	5.0 (.9)	4.9 (.9)

Group 1, male students/male teachers; group 2, female students/male teachers; group 3, male students/female teachers; group 4, female students/female teachers.
n, Number of students; SD, standard deviation.
Numbers of items refer to the items given in Table 1.

Table 6
P-values derived from the comparisons of the different groups of students.

Number of item	*p* Group 1 vs. Group 2	*p* Group 3 vs. Group 4	*p* Group 1 vs. Group 3	*p* Group 2 vs. Group 4
1	.295	1.000	1.000	1.000
2	1.000	1.000	.694	1.000
3	.119	1.000	.825	.769
4	1.000	1.000	1.000	.432
5	1.000	1.000	.479	.588
6	.171	1.000	1.000	1.000
7	1.000	1.000	1.000	1.000
8	1.000	1.000	1.000	.611
9	1.000	.665	.794	.399
10	1.000	1.000	1.000	1.000
11	1.000	1.000	1.000	.911
12	.952	1.000	1.000	1.000
13	.303	.586	1.000	1.000
14	**.008**	1.000	.559	1.000
15	1.000	1.000	1.000	1.000
16	.534	.837	1.000	.973
17	1.000	1.000	1.000	1.000
18	1.000	1.000	1.000	1.000
19	**.027**	.409	1.000	1.000
20	.636	1.000	.327	.633
21	1.000	1.000	.552	.875
22	**.034**	.627	.787	.178
23	1.000	1.000	1.000	1.000
24	.434	1.000	.119	1.000
25	.559	1.000	.371	.982
26	.627	1.000	.488	1.000
27	.488	1.000	**.018**	1.000
28	.735	1.000	1.000	.844

Significant p-values are highlighted by bold numbers.
Group 1, male students/male teachers; group 2, female students/male teachers; group 3, male students/female teachers; group 4, female students/female teachers.
Numbers of items 1–28 refer to the measurement items given in Table 3.

There were no statistically significant differences between the answers of male and female students to the different items when the teaching staff was female (Tables 7 and 8).

4. Discussion

Advances in implantology have led to three-dimensional (3D) planning software (Nkenke et al., 2007). A modern curriculum should include this technology in order to adequately prepare students for their future working life (Nkenke et al., 2012b). However, the inclusion of simulation software in a dental curriculum does not necessarily mean that this change will be accepted by the students. The acceptance of technological innovations is dependent upon a number of different processes (Nkenke et al., 2012a). It has been suggested that acceptance behavior is influenced by social and situational influences, user beliefs, user attitudes, and managerial interventions. Despite a large volume of work in the area of technology acceptance in medicine, only limited research has been conducted in the field of dental education (Chau and Hu, 2002). Especially, the influence of gender upon acceptance of virtual dental implant planning has not been a focus of research so far. However, gender issues are known to pervade the medical and dental profession, with women representing an increasing percentage of dental school admissions (Coy et al., 2003; Prichard et al., 2011; Stewart et al., 2006). The proportion of female students has continued to rise during the last decades and now has reached over 50%. Current reports predict that women will make up the majority of the medical workforce by 2017 (Crolla et al., 2011). Consequently, the aspect of gender should not be neglected. There is an ongoing discussion that gender issues have a high potential to affect women negatively. Salary and promotion inequality, discrimination, and harassment are a few problems that might be encountered (Prichard et al., 2011).

Table 7
Results of the questionnaire on gender aspects.

Number of item	Group 1 (n = 12)	Group 2 (n = 20)	Group 3 (n = 9)	Group 4 (n = 22)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
1	3.3 (1.2)	2.4 (1.2)	2.9 (1.9)	2.9 (1.7)
2	2.5 (1.2)	2.9 (1.3)	2.7 (1.3)	3.8 (2.0)
3	3.4 (1.6)	3.7 (1.7)	4.2 (1.6)	3.6 (1.5)
4	3.3 (1.9)	3.8 (1.5)	3.9 (1.8)	3.5 (1.4)
5	3.9 (1.9)	3.0 (1.8)	3.2 (1.9)	3.8 (1.5)
6	2.8 (1.9)	2.8 (1.7)	3.3 (1.8)	3.0 (1.8)
7	4.8 (.9)	4.8 (.8)	5.6 (.5)	5.2 (1.1)
8	2.0 (1.0)	3.8 (1.8)	1.2 (.7)	2.6 (1.7)
9	2.8 (1.9)	1.8 (.9)	3.7 (1.7)	2.6 (1.6)
10	5.1 (1.2)	5.1 (1.1)	5.4 (.5)	5.2 (1.1)
11	3.8 (1.1)	3.9 (.8)	4.4 (1.0)	3.8 (1.3)

Group 1, male students/male teachers; group 2, female students/male teachers; group 3, male students/female teachers; group 4, female students/female teachers.
n, number of students; SD, standard deviation.
The numbers of items refer to the measurement items given in Table 5.

Table 8
P-values derived from the comparisons of the different groups of students.

Number of item	*p* Group 1 vs. Group 2	*p* Group 3 vs. Group 4	*p* Group 1 vs. Group 3	*p* Group 2 vs. Group 4
1	**.037**	.586	1.000	1.000
2	1.000	.099	1.000	.259
3	1.000	1.000	.636	1.000
4	.649	1.000	1.000	1.000
5	.543	.598	1.000	.303
6	1.000	.517	1.000	1.000
7	1.000	1.000	.155	.398
8	**.004**	.101	.247	.132
9	**.019**	.346	1.000	1.000
10	1.000	1.000	1.000	1.000
11	1.000	.096	.627	1.000

Significant p-values are highlighted by bold numbers.
Group 1, male students/male teachers; group 2, female students/male teachers; group 3, male students/female teachers; group 4, female students/female teachers.
Numbers of items 1–11 refer to the measurement items given in Table 5.

Gender issues are also found within the educational setting, influencing numerous aspects of an undergraduate curriculum. Different teacher-student dyads have been identified to result in different learning and teaching experiences, providing both benefits and disadvantages to student learning (Prichard et al., 2011). With increasing enrollment of women in dental schools it is important to check on a regular basis whether instructional modifications are needed to accommodate gender differences (Stewart et al., 2006). So far, there is only limited knowledge on the relevance of the teaching staff's gender in dental education. In order to highlight this aspect, the field of virtual dental implant planning was chosen as an example. The study aimed at assessing the influence of the teaching staff's gender on the acceptance of a virtual implant planning course by undergraduate dental students and their general attitude toward dental implantology.

It has been stated that there is a pronounced difference between male and female students as far as the potential role of new media technology in medical education is concerned (Kron et al., 2010). Male students had a significantly stronger conviction that new media technology can have an educational value compared to their female counterparts. The results of the present study reveal that male as well as female students had a high level of acceptance of virtual dental implant planning software tools. However, as far as the extent of technology acceptance was concerned statistically significant differences between male and female students could be identified when the teachers were male. When the teaching staff

was female no significant differences could be found. These results may reflect that the female teaching staff was able to address both genders of students in a more egalitarian way which led to comparable positive convictions as far as perceived ease of use is concerned. The more egalitarian style of women has been reported in different fields, previously (Verdonk et al., 2009). In general, it is well-known that women have different styles in leadership and communication compared to their male counterparts in all the different fields of medicine (Jagsi et al., 2006). It seems there is a chance that increasing the percentage of female faculty will help in addressing future challenges like feminization of medicine adequately without increasing inequality between genders (Adams, 2005).

However, it has been reported that male undergraduates show more negative perceptions toward female teachers in medical education (Crolla and Bamforth, 2011). This aspect was not confirmed in the present study. Male students rated the competence of female teachers as positive as female students did. Moreover, the ratings of competence for male and female teachers did not differ significantly. Both genders of students made comparable ratings as far as this aspect was concerned. The results may reflect that the gender gap in this specific field of dental education is less pronounced than in other areas of medicine (Stewart et al., 2006).

In the present study, it was the perception of students of both genders that dental implantology is a field that is occupied by male and female dentists, equally. Compared to what is known from other field of medicine this result is surprising. A pronounced disproportion between male and female doctors choosing a surgical field as specialty has been described. It has been stressed that men are over-represented in surgical specialties (Risberg et al., 2003). Close to 90% of physicians in general surgery and surgical sub-specialties are men (Risberg et al., 2003). The proportion of women in surgery and surgical sub-specialties has changed from 11 to 12% over a 10-year period. This situation has been attributed to the absence or low representation of female role models in surgical specialties (Risberg et al., 2003). It has been hypothesized that physician teachers as role models considerably influence the career choice of medical students (Risberg et al., 2003). Absence of female role models in surgical specialties has been identified as an important reason why women reject or hesitate to enter these fields. It has been stated that there is a close correlation between the number of female graduates who chose surgery and the proportion of women in the surgical faculty (Neumayer et al., 2002). For the field of dental implantology the under-representation of female role models also has to be assumed. However, the results of the present study reveal that female students do not attribute dental implantology to male dentists, exclusively, but also accept the practice of implantology by female dentists as a normal situation. The gender of the teaching staff and especially female role models had no influence on the attitude of female students toward this aspect. Again, these results may support the assumption that there is a general tendency that the gender gap is narrowing independent of interventions arranged at universities (Stewart et al., 2006).

The present study shows some limitations. The results were derived from a single dental school and from a specialized field of dentistry. Therefore, the findings are not necessarily representative for dental students in general. Moreover, the included students were in the middle of their dental education. That means that with additional experiences to come over the following years the degree of technology acceptance might change in one or the other direction. It seems that longitudinal studies on the influence of the gender of the teaching staff on technology acceptance in dental education are needed based on a larger population of students in order to evaluate this aspect more comprehensively.

5. Conclusions

The more evenly distributed degree of technology acceptance of students of both genders being taught by a female staff is a favorable effect which may be explained by the more egalitarian style of women. Therefore, while feminization in dentistry proceeds, adequate measures should be taken to increase the number of female teachers.

Competing interests

The authors declare that they have no competing interests.

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