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## WEB PAPER

# Why supervisors should promote feedback-seeking behaviour in medical residency

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## Abstract

**Background:** Individual disposition of goal orientation and situational factors of the working context, both generate and modulate motives to seek feedback.

**Aim:** We looked for correlations between feedback-seeking and individual goal orientation, motives or concerns of feedback-seeking, working context of medical residents. We focussed on how promotion of feedback-seeking by supervisors and educational environment influenced motives and behaviours of feedback-seeking in residents.

**Methods:** Web-based administration of a Likert-type composite questionnaire to residents of a tertiary care teaching hospital in Switzerland and mini-interviews.

**Results:** Fifty-six (45%) of 125 residents completed the questionnaire. After multiple regression analysis promotion of feedback-seeking through supervisors remained the sole predictor correlating with feedback-seeking through inquiry ( $R^2=0.16$ ) and the motive of self-improvement ( $R^2=0.30$ ). This predictor was also associated with reduced concerns of ego-protection ( $R^2=0.14$ ) and impression-defence ( $R^2=0.18$ ). Performance-avoid goal orientation was associated with concerns of impression-defence ( $R^2=0.36$ ) and ego-protection ( $R^2=0.48$ ). Women had significantly more concerns of ego-protection, residents with more than three years of experience more concerns of impression-defence. Disillusion that PG-training would ever improve, seemed the main reason to refuse participation

**Conclusions:** Promotion of feedback-seeking through supervisors combined with delivery of high quality feedback may guide residents towards seeking feedback for professional self-improvement.

## Introduction

Let us imagine the following situation: a resident informs her patient, that colonoscopy and histopathology have revealed a cancer. Next therapeutic step would be neo-adjuvant chemo- and radiotherapy followed by an operation. After informing the patient she goes back to paperwork. An hour later a nurse calls her to talk once again with the upset patient. The following days this resident may show two behaviours: she may consult attending physicians and peers to discuss the incident, seeking inputs how others have delivered bad news to their patients. Or she may turn back to daily business, thinking the incident was bad luck and today's patients wish transparency but cannot handle transparency. She may even start to avoid delivering bad news.

Whatever she does, the key question is whether the resident decides to seek feedback from other residents, nurses or attending physicians about what could have been done, and what can be done in the near future. Feedback is the piece of information, which learners and employees need from supervisors to reassure themselves, that they are on the right track, or to improve performance (Ashford & Cummings 1983; Ende 1983; Ericsson 2004). Medical residents need feedback to learn about the content of their medical fields and their role

## Practice points

- Disposition and situational factors influence feedback-seeking behaviours.
- Promotion of feedback-seeking by attending physicians was significantly correlated with the motive to seek feedback for professional self-improvement amongst medical residents.
- Performance-avoid goal orientation was highly and consistently associated with concerns to ask for feedback and as a disposition may hinder medical residents in their professional development.

within the hospital's highly differentiated process. As realistic assessment of one's own strengths and gaps to guide self-directed learning remains a myth (Eva & Regehr 2005), feedback-seeking behaviour becomes an "informational resource" (Ashford 1986), facilitating reflection and improvement (Eva & Regehr 2008; Sargeant et al. 2008; Teunissen & Dornan 2008). Thus, in hospitals, feedback-seeking behaviour amongst its employees can be seen as a learning tool. However, the use of this learning tool depends on the learner's

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dispositional goal orientation (Dweck & Leggett 1988; Vande Walle & Cummings 1997) and situational factors within the working context (Ashford 1986; Button et al. 1996; Vande Walle et al. 2000) as both influence motives and behaviour of feedback-seeking (Brett & Vande Walle 1999; Tuckey et al. 2002; Janssen & Prins 2007; Teunissen et al. 2009).

In the present study we examined how goal orientation, promotion of feedback-seeking by supervisors and educational environment influence motives and behaviour of feedback-seeking amongst residents of a tertiary-care teaching hospital in Switzerland. This might add to our understanding, why some residents ask for feedback and others do not. The study followed Vande Walle's goal orientation model of feedback-seeking behaviour (Vande Walle 2003), in which he integrated the concept of "feedback-seeking behaviour" by Ashford and Cummings (1983) and the "goal-orientation model" by Dweck and Leggett (1988).

### Feedback-seeking behaviour at work

Ashford and Cummings (1983) defined feedback-seeking as "a conscious devotion of effort towards determining the correctness and adequacy of behaviours for attaining valued end states". Thus, feedback is an information resource for adaptation to an environment, with individuals carefully weighing perceived values and costs of feedback-seeking against each other. This can lead to different motives in feedback-seeking (Ashford et al. 2003): The perceived importance of attaining a goal, the degree of uncertainty about appropriate behaviours necessary to reach the goal and how others might evaluate these behaviours determine the perceived informational value of feedback for an individual. Individuals can either monitor (observe) or directly inquire their environment how others perceive and value their behaviour. While seeking feedback may look as beneficial, it goes along with perceived costs as well: self-presentation/image cost (exposing uncertainty and need for help), self-esteem/ego-cost (hearing negative feedback about the self), effort-cost (tracking down the feedback-source), inference-cost (interpretation of monitored feedback). It has been found that perceived value of feedback was the most important determinant for feedback-seeking frequency through monitoring and inquiry (Ashford 1986). Individuals differ in perceived values and costs of feedback-seeking (Ashford et al. 2003), but it remained unexplained what was causing these differences. Vande Walle (2003) addressed this issue by proposing a framework which incorporates individual differences in goal-orientation as explanatory factor for differences in feedback-seeking behaviour.

### Goal orientation

Individuals may have strong beliefs, which orient them towards different goals: Dweck and Leggett (1988) distinguished individuals with a performance goal orientation and individuals with learning goal orientation. People with a performance goal orientation believe that ability is a fixed inherent personal attribute. When they fear negative judgments, they react with anxiety, develop aversion to a task or withdraw from the task. In the face of failure, depressive affect

and shame worsens this maladaptive response pattern and hinders them to formulate another strategy. Vande Walle (in Vande Walle & Cummings 1997) split performance goal orientation into two components: a performance-prove (desire to demonstrate one's ability and competence) and performance-avoid goal orientation (desire to avoid looking incompetent).

In contrast, individuals with a learning goal orientation believe that great effort will activate ability and improve it. For them a failure just indicates that the current strategy is insufficient. They generate more effort and persistence to solve challenging tasks and to overcome obstacles. Progress on and eventually mastery of a valued task raises and maintains their self esteem (Dweck & Leggett 1988). Adaptive individuals can effectively balance learning and performance goals, what is indispensable in work life and only becomes a problem, if it leads to excessive focus on proving one's own competence instead of improving it (Vande Walle 2003).

### Goal orientation and feedback-seeking behaviour

As expected, individuals with a predominant learning goal orientation perceive self-presentation costs less and keep seeking feedback for informational values (Vande Walle & Cummings 1997; Tuckey et al. 2002; Janssen & Prins 2007; Teunissen et al. 2009; Van der Rijt et al. 2010).

For people with a performance-avoid goal orientation researchers found contradicting results. Either perceived values were negatively or perceived costs positively related to this disposition, leading to avoidance of feedback-seeking (Vande Walle & Cummings 1997). Or perceived values (like useful information on performance, self-improvement, self-validation) were positively associated with the disposition and led them to seek feedback on improving performance, possibly to avoid looking incompetent (Tuckey et al. 2002; Janssen & Prins 2007).

In individuals with performance-prove goal orientation, perceived costs of seeking feedback (like ego-protection, impression-defence) are positively and perceived values unrelated or negatively related to the disposition, thereby hindering them to seek feedback and improve competence (Vande Walle & Cummings 1997; Tuckey et al. 2002; Janssen & Prins 2007). Predominant performance-prove goal orientation thus may be a dangerous disposition concerning patient-care.

### Situational factors: Feedback-seeking context

Residents and clerks are essential to manage the workload in hospitals and at the same time teaching and learning in this clinical environment is crucial for their development towards competent physicians. Therefore, clinical departments should also create a supportive learning-oriented, no-blame culture (Hoff et al. 2004; Fullan 2008; Garvin et al. 2008). In such a culture supervisors structure and organize the work of their subordinates, are clear about goals and expectations, promote feedback-seeking and are friendly, approachable and considerate. These attitudes increase feedback-seeking in subordinates directly or by enhancing perceived values and reducing

perceived costs (Vande Walle et al. 2000; Steelman et al. 2004; Teunissen et al. 2009). Attending physicians strive to create such safe environments and if residents start taking the responsibility for their learning and seek feedback, a learning culture may evolve (Teunissen et al. 2007; Teunissen & Dornan 2008). Because learners view self-solicited feedback as more useful and instructive when provided on observed behaviours by a supervisor who is credible and supportive in their eyes (Ende 1983; Vande Walle 2003; Steelman et al. 2004; Van Hell et al. 2009), self-solicited workplace-based assessments (WbA) (Veloski et al. 2006; Norcini & McKinley 2007; Sargeant et al. 2008) could be used to guide the learner's attention on the process of developing a competency and on the effort invested in the acquisition of skills to reduce the influence of performance goal orientation (Dweck & Leggett 1988). Self-determination theory (Deci et al. 1991) supports this approach: if a learner seeks feedback, he or she has more sense of choice and control on how to achieve a goal, what in turn enhances receptivity for feedback, intrinsic motivation to use the provided feedback and perception of competence-development (Vande Walle 2003; Steelman et al. 2004; Van der Rijt et al. 2010). Yet, some trainees will need encouragement from their supervisors to initiate WbA to overcome their fear of being observed and to acknowledge its benefit for their professional development (Pilgrim et al. 2012).

Although residents valued feedback for their professional development, Miller and Archer (2010) did not find much evidence that WbA led to improved performance, except for multisource feedback if it was combined with coaching. These results contrast the findings of Veloski et al. (2006). This may be due to how WbA are conducted in what learning climate: low approachability of supervisors, lack of time, preference to use WbA just as a tick-box, trend of supervisors to deliver written feedback late (Quantrill & Tun 2012) or their reluctance to provide meaningful feedbacks (Pilgrim et al. 2012) are some reasons. A promising approach to reduce reluctance and discomfort to provide (negative) feedback is to elaborate the feedback in a dialogue with the resident as Kogan et al. (2012) observed.

The current study explored, whether two contextual factors, namely perceived promotion of feedback-seeking by supervisors and perceived educational environment, had an effect on motives and behaviours of feedback-seeking amongst medical residents of the test-hospital. If there existed any correlation, promotion of feedback-seeking combined with provision of good-quality feedback might direct residents towards asking feedback for self-improvement while reducing their concerns and hopefully enable a better transfer of skills into daily work.

## Methods

### Participants

The Cityhospital Triemli in Zürich is a tertiary care teaching hospital attached to the Medical Faculty of the University of Zürich, Switzerland. After approval of the study by the hospital's medical and general management, which is responsible for ethical considerations in research not involving

patients or bio-medical products, all residents working since more than three months at the test-hospital were invited to participate on a voluntary basis. They were allowed to participate during working hours, confidentiality was guaranteed and disclosure of results promised. A lottery for two cheques for a restaurant of choice was offered.

### Instrumentation

During November 2010 a web-based survey (SurveyMonkey.com) in German language was administered. Information was collected about gender, years of residential experience, implementation of WbA and group of disciplines. "Internistic disciplines" consisted of internal medicine and its subspecialties, rheumatology, radiooncology-nuclearmedicine, pediatrics and dermatology. "Surgical disciplines" included all operating disciplines; "service disciplines" were anaesthesia, intensive care medicine, radiology, laboratory medicine and pathology.

The Likert-type section with a five-point scale was composed with items based on previously validated and published measurement instruments:

- *Frequency of feedback-seeking by monitoring or inquiry* (Ashford 1986)
- *Reconceptualized PHEEM* referred to as "Short-version PHEEM" for perceived educational environment (Wall et al. 2009).
- *Promotion of feedback-seeking by supervisors* (Steeleman et al. 2004) for perceived willingness of supervisors to provide feedback
- *Learning goal orientation* (Button et al. 1996) and *performance goal orientation* (Brett & Vande Walle 1999)
- *Motives of self-improvement and self-validation* (Janssen & Prins 2007), *concerns of ego-protection and impression-defence* (Tuckey et al. 2002).

This questionnaire with 58 items was translated into German by the first author and retranslated into English by another bilingual educator (see Appendix). Two content-differences were corrected and the questionnaire tested for clarity and feasibility with four residents not working at the test-hospital.

Fifty-six (45%) of 125 eligible residents completed the questionnaire. 28 participants belonged to "internistic" disciplines, 14 each to the "surgical" or "service" disciplines. 27 were male, 29 female, 22 had residential training between 0 and 3 years, 34 more than 3 years. Fourteen participants reported that WbA were implemented in their disciplines. To ensure anonymity, we did not try to trace responders and non-responders.

### Mini-interviews

To understand this moderate participation, 19 mini-interviews were conducted with residents on duty; 7 belonged to the "internistic" disciplines, and 6 each to the "surgical" or "service" disciplines, gender was balanced. Only 10 interviewees disclosed, whether they had (6) or had not (4) participated in the survey.

Statistical analysis

Data were analysed with SYSTAT and SPSS (SYSTAT for Windows, Version 13, SYSTAT Inc., Evanston IL; SPSS for Windows, Version 17, SPSS Inc., Chicago, IL). As correlations among 11 variables were studied, the test of significance of a correlation coefficient was adjusted with the Bonferroni method. In multiple testing this method protects of finding significant differences by chance alone (personal communication H. Vorkauf, 28.02.2011). A two-sample *t*-test was computed to look for differences in gender and years of training. Analysis of variance to look for differences between groups of disciplines was omitted due to the small sample size. For the same reason we were unable to compute path way analysis to look if any predictor could be causative.

Results

Mean scores, standard deviations and Cronbach Alphas of the German and original scales are shown in Table 1. Half of the scales were of moderate internal consistency; therefore, interpretation of the results is limited. Perceived overall educational environment was quite good but the dimension of teaching and support was problematic (Table 2) while perceived promotion of feedback-seeking by supervisors reached 71% (14.25p) of total scoring (Table 1). Simple correlations are shown in Table 3.

Multiple regression analysis (Table 4)

*Feedback-seeking method.* When regressing the domains and their combinations on the inquiry method, only the domain of context reached significance and explained 16% of the variance. The general educational environment (short-version PHEEM) had negative weight ( $\beta - 0.44$ ), suggesting that good educational environment reduces the need for feedback as goals and processes are clear through better teaching and instructions. Promotion of feedback-seeking by supervisors remained the sole predictor for the inquiry method ( $\beta + 0.48$ ).

*Motives of self-improvement and self-validation.* When residents sought feedback, only the predictor promotion of feedback-seeking by supervisors had significant effect ( $\beta 0.60$ ,  $p < 0.01$ ) on the motive of self-improvement and accounted for 30% of the variance for adopting this motive. General educational environment (short-version PHEEM) and goal dispositions had no significant effect. The combination of disposition and context still influenced this motive significantly, albeit only through promotion of feedback-seeking ( $\beta + 0.51$ ) but not with any of the dispositions (although learning goal orientation reached highest  $\beta$ -weight). This suggests that residents indeed would seek feedback for motives of self-improvement, if they are encouraged by their supervisors. For the motive of self-validation learning and performance-proof goal orientations remained significant predictors.

**Table 1.** Mean scores, standard deviations and Cronbach Alphas of scales.

Scale and grading points	N residents	mean score	SD	$\alpha$ German scale	$\alpha$ Original scale
Inquiry method (3–15p)	56	7.39	1.92	0.53	no statement
Monitoring method (3–15p)	56	10.91	2.17	0.72	0.77
Learning GO (8–40p)*	56	31.34	3.64	0.73	0.79
Perf prove GO (4–20p)†	56	10.09	2.12	0.52	0.81
Perf avoid GO (4–20p)‡	56	8.32	2.44	0.71	0.88
Motive self improvement (4–20p)	56	15.36	2.91	0.86	0.73
Motive self validation (4–20p)	56	11.09	2.03	0.66	0.86
Concern impression defence (4–20p)	56	9.63	2.28	0.59	0.91
Concern ego protection (4–20p)	56	10.55	2.80	0.74	0.85
PHEEM short version (0–48p)§	56	28.64	5.14	0.68	no statement
Feedback-seeking promotion (4–20p)	56	14.25	2.20	0.64	0.84

\*Learning Goal Orientation, †Performance-prove Goal Orientation, ‡Performance-avoid Goal Orientation, §Postgraduate Hospital Educational Environment Measure

**Table 2.** Descriptive statistics of items in the short-version PHEEM.

Items	Teaching + Support (0–16p)				Working + Learning (0–16p)				Lack of Harassments (0–16p)			
	N = 56				N = 56				N = 56			
	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
Mean score	2.23	1.77	1.89	1.84	1.64	2.18	2.11	2.71	3.64	3.54	2.64	2.45
SD	0.83	0.91	0.87	0.73	1.14	1.01	1.04	1.17	0.56	0.66	0.88	0.85

Item-scale: 0–1 = very poor, 1–2 = plenty of problems, 2–3 = room for improvement, >3–4 = excellent  
E1–E12: refer to the composite-questionnaire (see Appendix)

**Table 3.** Simple univariate Pearson correlations including Bonferroni adjustments.

	Mean	SD	$\alpha$	1	2	3	4	5	6	7	8	9	10	11
1. Inquiry	7.39	1.92	0.53	–										
2. Monitoring	10.91	2.17	0.72	0.08	–									
3. Learning GO†	31.34	3.64	0.73	0.12	0.14	–								
4. Performance-prove GO	10.09	2.12	0.52	–0.03	0.23	0.07	–							
5. Performance-avoid GO	8.32	2.44	0.71	–0.09	–0.12	–0.33*	–0.01	–						
6. Motive self improvement	15.36	2.91	0.86	0.24	0.30*	0.28*	0.06	–0.20	–					
7. Motive self validation	11.09	2.03	0.66	0.17	0.29*	0.38**	0.29*	–0.03	0.52§	–				
8. Impression defence	9.63	2.28	0.59	–0.11	0.10	–0.15	–0.14	0.53§	–0.13	–0.02	–			
9. Ego protection	10.55	2.80	0.74	–0.05	0.03	–0.16	0.05	0.67§	–0.28*	–0.01	0.61§	–		
10. Short version PHEEM‡	28.64	5.14	0.68	–0.14	0.21	0.04	–0.07	–0.16	0.28*	0.16	–0.20	–0.07	–	
11. Feedback-seeking Promotion	14.25	2.20	0.64	0.20	0.18	0.24	–0.01	–0.37**	0.54§	0.21	–0.41**	–0.33*	0.63§	–

\*= $p < 0.05$ ; \*\*= $p < 0.01$ ; §= $p < 0.01$  and Bonferroni adjustment  
 †GO=Goal Orientation, ‡Postgraduate Hospital Educational Environment Measure

**Table 4.** Regression analysis.

Dependent Variable	1 independent domain			2 independent domains		
	Domain	$R^2$	Standardized regression coeff $\beta$	Domains	$R^2$	Stand. regression coeff $\beta$
Inquiry	Goal disposition	0.02		Goal + Motives	0.08	
	Motives	0.07		Goal + Context	0.16	
	Context	0.16*	PHEEM –0.44*; FBprom 0.48*	Motive + Context	0.19	
Monitoring	Goal disposition	0.07		Goal + Motives	0.21	
	Motives	0.13		Goal + Context	0.12	
	Context	0.05		Motive + Context	0.16	
Self-improvement	Goal disposition	0.09		Goal + Context	0.32**	FBprom 0.51**; LGO 0.16
	Context	0.30**	PHEEM –0.10; FBprom 0.60**			
Self-validation	Goal disposition	0.22*	LGO 0.39**; PpGO 0.26*; PaGO 0.10	Goal + Context	0.26*	LGO 0.38*; PpGO 0.27*
	Context	0.04				
Impression Defence	Goal disposition	0.30**	LGO 0.04; PpGO –0.14; PaGO 0.55**	Goal + Context	0.36**	PaGO 0.46**; FBprom –0.28
	Context	0.18*	PHEEM 0.09; FBprom –0.47**			
Ego Protection	Goal disposition	0.45**	LGO 0.06; PpGO 0.05; PaGO 0.69**	Goal + Context	0.48**	PaGO 0.64**; FBprom –0.21
	Context	0.14*	PHEEM 0.22; FBprom –0.47*			

FBprom: Feedback-seeking promotion, LGO: learning goal orientation, PpGO: performance- prove goal orientation, PaGO: performance-avoid goal orientation.  
 \*= $p < 0.05$ ; \*\*= $p < 0.01$ . For better legibility non-significant  $\beta$  are mostly omitted.

*Motive of impression-defence.* When disposition or context alone was regressed on this motive, performance-avoid goal orientation had a significant positive ( $\beta$  0.55) and promotion of feedback-seeking by supervisors a significant negative ( $\beta$  –0.47) effect on this motive. When combining disposition and context, only performance avoid-goal orientation kept its significant weight ( $\beta$  0.46) while promotion of feedback-seeking tended to reduce this weight, but did not reach significance. Therefore, in this cohort, performance-avoid goal orientation was the main predictor for this motive and promotion of feedback-seeking by supervisors the main predictor against this motive in the other two dispositions.

*Motive of ego-protection.* For this motive our results show a similar pattern as above: performance-avoid goal disposition with a  $\beta$ -weight of +0.69 explained 45%, and context 14% of the variance in adopting this motive. When combining disposition and context, performance-avoid goal orientation kept its significant effect ( $\beta$  0.64) and promotion of feedback-seeking

could not reduce it significantly enough. General good educational environment turned out to have a non-significant positive effect ( $\beta$ -weight of PHEEM +0.22) on this motive, which seems contradictory: In a good educational environment discussions and direct observation with feedback would be numerous. For an individual with predominant performance-avoid goal orientation this might be menacing, because it forces to look at own gaps in performance. Believing, that skills are rather a fixed ability than an incremental attribute, workplace based assessments might then be experienced as an attack on personality, decreasing one's self-esteem.

In the other two dispositions promotion of feedback-seeking by supervisors ( $\beta$  –0.47) was the main predictor against this motive.

*Two-Sample t-Test (Table 5).* Women were less learning goal orientated and more concerned with motives of ego protection while residents with more than three years of training reported more motives of impression-defence.

**Table 5.** Two-samples *t*-Test for differences in gender or training years.

Variable	Group	Mean Difference	95% Confid. Interval		<i>t</i>	df	<i>p</i>
			Lower lim	Upper lim			
Learning goal	Male	1.92	0.02	3.82	2.03	54	0.047
	Female						
Ego protection	Male	-1.50	-2.96	-0.04	-2.06	54	0.044
	Female						
Impression	0-3y training	-1.93	-3.07	-0.78	-3.37	54	0.001
Defence	>3y training						

### Mini-interviews

There was no distrust in the author of the survey and the questionnaire could be easily answered within 15–20 min. All interviewees assumed disillusion to be the main reason to refuse participation: despite yearly PGME-evaluations residents had not experienced any change in their trainings across different hospitals. Second most reason was lack of time due to high patient-flow, pressure to follow optimal processes, reduce expenses and adhere to the working-hour limit of 50 h per week. Most residents reported to have good relationships with their very busy supervisors. But few supervisors engage themselves in teaching and are good teachers. At some disciplines, mentors are assigned and mentoring is intensive during the first three months of employment, thereafter it reduces to meetings usually just before the appraisal interview with the head of the department. WbA is institutionalised in two disciplines, but some supervisors do not take them seriously.

## Discussion and conclusion

As dispositional goal orientation and situational cues both affect feedback-seeking behaviours in individuals (Vande Walle 2003), we explored the effects of two factors in the present study: how promotion of feedback-seeking by supervisors and how educational environment influenced motives and methods of feedback-seeking in relation to dispositional goal orientation amongst residents of a tertiary care hospital in Switzerland. Situational factors which have been demonstrated to influence feedback-seeking are: initiation of feedback by the learner or jointly by the supervisor and learner increases instructiveness of provided feedback based on observed behaviours for learners (Ende 1983; Van Hell et al. 2009; Pilgrim et al. 2012). Supervisors, who are familiar with the learner's work are seen credible by trainees (Ashford et al. 2003; Steelman et al. 2004) and if these supervisors are considerate, supportive and instructive, the perceived value of feedback-seeking increases, mediates feedback-seeking (Vande Walle et al. 2000; Teunissen et al. 2009) and enhances the motivation of the seeker to use the feedback (Steelman et al. 2004). These latter authors also showed that promotion of feedback-seeking by supervisors was the strongest predictor of

feedback-seeking. Hence, especially the relationship of medical residents with their supervisors is of special interest.

In the present study we found, that when residents seek feedback, promotion of feedback-seeking by supervisors was significantly correlated with the inquiry method and with adopting the motive of self-improvement. Further, promotion of feedback-seeking by supervisors was associated with reducing concerns of ego-protection and impression-defence, if the disposition performance-avoid goal orientation was not predominant. This suggests that residents would indeed seek feedback for motives of self-improvement, if they are encouraged in doing so by their supervisors, what in turn may lead to better skill-transfer (Brett & Vande Walle 1999). Thus, we could reconfirm promotion of feedback-seeking as an important factor in the context of feedback-seeking (Steelman et al. 2004; Pilgrim et al. 2012).

But in our study the methods of feedback-seeking and the motive of self-improvement were not related to goal orientation, possibly due to the study's small sample size. Others have reported low (0.17–0.39) albeit significant positive correlations (Vande Walle & Cummings 1997; Vande Walle et al. 2000; Tuckey et al. 2002; Teunissen et al. 2009; Van Rijt et al. 2010). For individuals with predominant performance goal orientation most researchers have found no or negative associations with the inquiry method (Vande Walle & Cummings 1997; Tuckey et al. 2002; Teunissen et al. 2009), except Van Rijt et al. (2010), who found a positive correlation with performance-prove goal orientation.

We identified performance-avoid goal disposition as a very strong disposition, which is highly associated with concerns of ego-protection and impression-defence. In these individuals promotion of feedback-seeking could not attenuate concerns and a good educational environment even tended to aggravate concerns of ego-protection. Probably because in good educational environment discussions and direct observation with feedback would be numerous, they would then be forced to look at own gaps of knowledge and skills. Believing, that competences are rather a fixed ability than an incremental attribute, they might experience numerous feedbacks as an attack on personality, decreasing their self-esteem. Our finding, that only performance-avoid goal orientation is highly related with perceived costs parallels the results of Vande Walle and Cummings (1997). In contrast others have found, that individuals with performance-avoid

goal orientation had no concerns of impression-defence or ego-protection and sought feedback with motives of self-improvement and self-validation possibly to avoid looking incompetent (Tuckey et al. 2002; Janssen & Prins 2007).

Contrary to Janssen and Prins (2007), in the study hospital the motive of self-validation was adopted by individuals with learning or performance-proof goal orientation and the motives of self-validation and self-improvement were inter-related. Probably in our study these residents became aware of own professional improvement through feedback-seeking with motives of self-validation and then concluded, that their learning strategies are effective.

Residents with more than three years of training had significantly more concerns of impression-defence in our data. This is in line with Ashford (1986) that experienced employees have more concerns about image-costs. Surprisingly, females were less learning orientated in the present survey and had more concerns of ego-protection. Thus the gender aspect needs further clarification, as feminization of medicine is a fact. Possibly female residents question themselves more whether and how they can be good professionals and at the same time good mothers. These worries may further stress their self-esteem and drive female residents towards performance goal orientation and ego-protection.

In the present survey educational environment was measured with the proposed short-version PHEEM of Wall et al. (2009). The subscale for teaching and support of senior doctors showed, that feedback-quality of the supervisors was low in the study hospital, possibly leading to the fact, that residents did not seek feedback often although they perceived promotion of feedback-seeking by supervisors as good. Mini-interviews supported this assumption: residents usually had good relationships with their supervisors, but their busy supervisors rarely engaged themselves in teaching, in providing feedback or in mentoring. Findings of Pilgrim et al. (2012) as well as Quantrill and Tun (2012) concur with our results. Therefore, encouraging feedback-seeking should be combined with the provision of good-quality feedback to make WbA a powerful educational tool and feedback-seeking behaviours an effective learning tool. The predictors' promotion of feedback-seeking by supervisors and the short-version PHEEM were highly interrelated. We interpret, that for our residents promotion of feedback-seeking on a daily basis is an important indicator for good educational climate. We, therefore, propose to include promotion of feedback-seeking into PHEEM. Overall the short-version PHEEM nearly reached good reliability in our study and could be recommended for further use in composite questionnaires.

## Limitations of the study

Due to the final small sample of 56 participants, known low correlations between goal orientation and feedback-seeking behaviours could not be found and differences between groups of disciplines not examined. For the same reason we could not compute path analysis to identify causal factors to explain the feedback-seeking behaviours we met. The greatest bias arises by the 69 non-responders. We do

not know how medical discipline, gender or years of training influenced participation. The majority of non-responders might be disillusioned as our mini-interviews presume. Yet we could as well speculate that the majority of non-participating residents might be predominantly performance goal oriented thereby making our assumptions too optimistic. Another limitation of this study is that the results are based on self-report: wishful thinking of own behaviour, revenge for experienced frustrations and hurried answers may distort the outcome. The results characterize one teaching hospital and thus the study must be viewed as a pilot study and needs replication to derive generalizations.

## Conclusion

This study supported the assumption, that supervisors who promote feedback-seeking of residents may guide their residents to seek feedback with motives of self-improvement, whereas concerns of ego-protection and impression-defence would be reduced. But our results also suggest that supervisors should provide high-quality feedback to motivate residents to really ask feedback for self-improvement. Whether promotion of feedback-seeking by supervisors combined with delivery of timely and high-quality feedback lead to better performance of medical residents needs exploration. We found that concerns to seek feedback were strongly and consistently related to performance-avoid goal orientation. The latter disposition therefore could hinder residents in their professional development and be problematic in patient care. Residents viewed the amount of promotion of feedback-seeking as an indicator for good educational climate and so we propose to include this indicator into the PHEEM.

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## Glossary

**Goal orientation:** This concept describes how implicit beliefs about their abilities orientate individuals towards goals and motivate them to generate behaviours to reach these goals, for example in the cognitive, social or physical domain

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## Appendix

Composite study questionnaire English and German

### A Demography

In which departmental group are you currently working as a resident since more than 3 months?

*In welcher Abteilungsgruppe sind Sie gegenwärtig seit mindestens 3 Monaten als Assistentin oder Assistent angestellt?*

- (A1) Internal Medicine (incl special disciplines), pediatrics, rheumatology, radio-oncology/nuclearmedicine  
*Innere Medizin (inkl Spezialdisziplin), Pädiatrie, Rheumatologie, Radio-Onkologie/Nuklearmedizin*

- (A2) Surgery (incl special disciplines), gynaecology-obstetrics, ophthalmology, urology  
*Chirurgie (inkl Spezialdisziplin), Frauenklinik, Ophthalmologie, Urologie*
- (A3) Anesthesiology, intensive care medicine, radiology, laboratory medicine, pathology

*Anästhesie/IPS, Radiologie, Labormedizin, Pathologie*

Gender, *Geschlecht*

- (A4) male  
*Männlich*

- (A5) female  
*Weiblich*

Years of training as resident, *Erfahrungsjahre als Assistentin resp Assistent*

- (A6) 0–3 years, *0–3 Jahre*  
(A7) More than 3 years, *mehr als 3 Jahre*

Does your clinic apply WbA (like mini clinical evaluation exercise miniCEX or directly observed procedural skill DOPS) for structured feedback?

*Werden an Ihrer Abteilung arbeitsplatzbasierte Assessments (wie mini clinical evaluation exercise miniCEX oder directly observed procedural skill DOPS) für strukturiertes Feedback verwendet?*

- (A8) yes, *Ja*  
(A9) No, *nein*

### B Frequency of feedback-seeking (Ashford 1986)

1 = never, 5 = very frequently  
*1 = nie, 5 = sehr häufig*

In order to find out how well you are performing in your present job, how frequently do you

*Um herauszufinden, wie gut Ihre Leistung an Ihrer aktuellen Stelle ist, wie häufig*

- (B1) Observe what performance behaviours your supervisor rewards and use this as feedback on your own performance?  
*Beobachten Sie, welche Arbeitsweisen Ihr Vorgesetzter schätzt, um dies als Feedback für Ihre eigene Arbeitsweise zu nutzen?*
- (B2) Pay attention to how your supervisor acts toward you in order to understand how he/she perceives and evaluates your work performance?  
*Beobachten Sie aufmerksam, wie sich Ihr Vorgesetzter Ihnen gegenüber verhält, um herauszufinden, wie Ihre Arbeitsleistung aufgenommen und beurteilt wird?*
- (B3) Observe the characteristics of people who are rewarded by your supervisor and use this information?  
*Beobachten Sie Eigenschaften von Leuten, welche von Ihrem Vorgesetzten gefördert werden, um diese Information zu nutzen?*
- (B4) Seek information from your co-residents about your work performance?  
*Informieren Sie Sich bei Ihren Mit-AssistentInnen bezüglich Ihrer Arbeitsleistung?*
- (B5) Seek feedback from your supervisor about your work performance?  
*Bitten Sie Ihren Vorgesetzten um ein Feedback zu Ihrer Arbeitsleistung?*
- (B6) Seek feedback from your supervisor about potential for advancement within the residency program?  
*Erbitten Sie von Ihrem Vorgesetzten ein Feedback, wie die Chancen stehen, dass Sie in Ihrer Weiterbildung vorankommen (zB Rotationen, OP-Katalog)?*

### C Goal orientation

How much do you currently agree with the following statements?

(1 = totally disagree, 5 = totally agree),

*Wie treffen die nachfolgenden Aussagen zum jetzigen Zeitpunkt auf Sie zu?*

(1 = trifft gar nicht zu, 5 = trifft voll zu)

#### Learning goal orientation (Button SB et al. 1996)

- (LG1) The opportunity to do challenging work is important to me  
*Die Möglichkeit einer herausfordernden Arbeit nachzugehen ist mir wichtig*
- (LG2) When I fail to complete a difficult task, I plan to try harder the next time I work on it  
*Wenn mir eine schwierige Aufgabe nicht ganz gelingt, nehme ich mir vor, mich das nächste Mal noch mehr anzustrengen*
- (LG3) I prefer to work on tasks that force me to learn new things  
*Ich ziehe es vor Aufgaben zu erledigen, die mich zwingen Neues zu erlernen.*
- (LG4) The opportunity to learn new things is important to me  
*Die Möglichkeit Neues zu lernen ist mir wichtig*
- (LG5) I do my best when I am working on a fairly difficult task  
*Ich arbeite am besten, wenn ich eine ziemlich schwierige Aufgabe erledige*
- (LG6) I try hard to improve on my past performance  
*Ich strenge mich an, meine vorherige Leistung zu übertreffen*
- (LG7) The opportunity to extend the range of my abilities is important to me  
*Die Möglichkeit, meine Fähigkeiten zu erweitern ist mir wichtig*
- (LG8) When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work  
*Wenn ich Schwierigkeiten habe ein Problem zu lösen, genieße ich es im Allgemeinen, verschiedene Ansätze auszuprobieren um herauszufinden, welcher funktionieren könnte.*

#### Performance-prove goal orientation (Vande Walle in Brett & Vande Walle 1999)

- (PpG1) I like to show that I can perform better than my co-residents  
*Ich zeige gerne, dass ich besser arbeite als meine Mit-AssistentInnen*
- (PpG2) I try to figure out what it takes to prove my ability to others at work  
*Ich versuche herauszufinden, wie ich meine Fähigkeiten anderen während der Arbeit beweisen kann*

(PpG3) I enjoy it when others at work are aware of how well I am doing  
*Ich genieße es, wenn MitarbeiterInnen realisieren, wie gut ich bin*

(PpG4) I prefer to work on projects where I can prove my ability to others  
*Ich ziehe es vor, Arbeiten zu erledigen, durch die ich anderen meine Fähigkeiten beweisen kann*

**Performance-avoid goal orientation** (Vande Walle in Brett & Vande Walle 1999)

(PaG1) I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others

*Ich würde einer neuen Aufgabe ausweichen, wenn das Risiko bestünde, dass ich dabei ziemlich inkompetent erscheinen würde*

(PaG2) Avoiding a show of low ability is more important to me than learning a new skill

*Es ist mir wichtiger, eine Blöße zu vermeiden als neues Können zu erlernen*

(PaG3) I am concerned about taking on a task at work if my performance would reveal that I had low ability

*Es beunruhigt mich, eine Aufgabe zu erledigen, wenn diese aufzeigen könnte, dass meine Befähigung dafür mässig ist*

(PaG4) I prefer to avoid situations at work where I might perform poorly

*Ich ziehe es vor, Arbeitssituationen auszuweichen, welche mich schlecht dastehen lassen könnten.*

**D Motives**

How much do you currently agree with the following statements?

(1 = totally disagree, 5 = totally agree), \* inverse scoring

*Wie treffen die nachfolgenden Aussagen zum jetzigen Zeitpunkt auf Sie zu?*

*(1 = trifft gar nicht zu, 5 = trifft voll zu)*

**Motives of self-improvement** (Janssen O & Prins J 2007)

I ask for feedback

*Ich bitte um Feedback/frage nach Feedback/ersuche um Feedback*

(SI1) To learn, how I can master tasks  
*Um zu lernen, wie ich eine Aufgabe meistern kann*

(SI2) To learn, how I can improve performing my work  
*Um zu lernen, wie ich meine Arbeitsleistung verbessern kann*

(SI3) To get information about how I can solve problems  
*Um Informationen zu erhalten, wie ich Probleme lösen kann*

(SI4) To improve my knowledge and capabilities  
*Um mein Wissen und meine Fähigkeiten zu verbessern*

**Motives of self-validation** (Janssen O & Prins J 2007):

I ask for feedback

*Ich ersuche um Feedback*

(SV1) Because I like to hear I am doing fine in my work and training

*Weil ich gerne höre, dass meine Arbeitsleistung und meine Lernfortschritte gut sind*

(SV2) To hear from others I am doing well  
*um von Anderen zu hören, dass ich es gut mache*

(SV3) To get compliments so that I feel good  
*Um Komplimente zu erhalten, damit ich mich gut fühle*

(SV4) To reassure everything goes well  
*Um mich zu vergewissern, dass alles gut geht*

**Motives of ego protection** (Tuckey M et al. 2002)

(EP1) \*Negative feedback doesn't really lower my self-worth, so I don't go out of my way to avoid it  
*\*Negatives Feedback vermindert mein Selbstwertgefühl nicht wirklich, deshalb vermeide ich negatives Feedback nicht.*

(EP2) It's hard to feel good about myself when I receive negative feedback  
*Es ist schwierig mich selber gut zu finden, wenn ich negatives Feedback erhalte.*

(EP3) I try to avoid negative feedback because it makes me feel bad about myself  
*Ich versuche negatives Feedback zu vermeiden, weil ich mich dadurch schlecht fühle.*

(EP4) I worry about receiving feedback that is likely to be negative because it hurts to be criticized.  
*Ich bin beunruhigt, wenn das bevorstehende Feedback negativ sein könnte, weil Kritik schmerzt.*

**Motives of impression defence** (Tuckey M et al. 2002)

(ID1) I am concerned about what people would think of me if I were to ask for feedback  
*Ich Sorge mich, was andere Leute von mir denken würden, wenn ich um Feedback bäte.*

(ID2) I am worried about the impression I would make if I were to ask for feedback  
*Ich bin beunruhigt, welchen Eindruck ich wohl hinterlassen würde, wenn ich um ein Feedback bitten würde.*

(ID3) \*I don't really care if people know the type of feedback I get  
*\*Es ist mir gleichgültig, wenn andere Leute erfahren was für Feedback ich erhalten habe.*

(ID4) If I sought feedback about my performance, I wouldn't want other people to know what type of feedback I received  
*Wenn ich um ein Feedback über meine Leistung nachsuchte, möchte ich nicht, dass andere Leute erfahren wie es ausgefallen ist.*

**E Context**

**Promotion of feedback seeking by supervisor** (Steelman LA et al. 2004)

How much do you currently agree with the following statements?

(1 = totally disagree, 5 = totally agree), \* inverse scoring

Wie treffen die nachfolgenden Aussagen zum jetzigen Zeitpunkt auf Sie zu?

(1 = trifft gar nicht zu, 5 = trifft voll zu)

- (FP1) \*My supervisors are often annoyed when I directly ask for performance feedback  
*\*Meine Vorgesetzten sind oft verärgert, wenn ich sie direkt um Feedback zu meiner Leistung bitte.*
- (FP2) \*When I ask for performance feedback, my supervisors generally don't give me the information right away  
*\*Wenn ich um Feedback zur Arbeitsleistung bitte, zieren sich meine Vorgesetzten, diese Information auch zu geben.*
- (FP3) I feel comfortable asking my supervisors for feedback about my work performance  
*Ich fühle mich wohl, meine Vorgesetzten um Feedback zu meiner Arbeitsleistung zu fragen*
- (FP4) My supervisors encourage me to ask for feedback whenever I am uncertain about my job performance  
*Meine Vorgesetzten ermutigen mich, um Feedback nachzusuchen, wann immer ich mich beim Erledigen meiner Arbeit unsicher fühle.*

**Perceived educational environment "short-version PHEEM"** (Wall et al. 2009)

How much do you currently agree with the following statements?

(0 = totally disagree, 4 = totally agree), \* inverse scoring

Wie treffen die nachfolgenden Aussagen zum jetzigen Zeitpunkt auf Sie zu?

(0 = trifft gar nicht zu, 4 = trifft voll zu)

- (1) Senior doctor support and teaching skills  
 (E1) My clinical teachers have good mentoring skills  
*Meine klinischen Ausbilder sind gut im Beraten.*
- (E2) I get regular feedback from seniors  
*Ich erhalte regelmässig Feedback von meinen Vorgesetzten*

(E3) The clinical teachers provide me with good feedback on my strengths and weaknesses

*Die klinischen Lehrer geben mir nützliches Feedback bezüglich meiner Stärken und Schwächen*

(E4) Senior staff utilise learning opportunities effectively  
*Die Vorgesetzten benutzen Lern-Gelegenheiten effektiv*

(2) Conditions of working and time to learn

(E5) My hours conform to the swiss working hours limitation of 50 h/w

*Meine Arbeitsstunden entsprechen der Schweizerischen Arbeitszeit-Begrenzung von 50h/Woche*

(E6) I have protected educational time in this post  
*An dieser AA-Stelle habe ich definierte Weiterbildungs-Stunden*

(E7) My workload in this job is fine  
*Meine Arbeitsbelastung an dieser Stelle ist in Ordnung.*

(E8) I have a contract of employment that provides information about hours of work  
*Ich habe einen Arbeitsvertrag, der mich über meine Arbeitszeiten informiert*

(3) Lack of harassments

(E9) \*There is racism in this post  
*\*Es gibt Rassismus an dieser Stelle*

(E10) \*There is sex discrimination in this post  
*\*Es gibt sexuelle Diskriminierung an dieser Stelle*

(E11) I have to perform inappropriate tasks  
*Ich muss unangemessene Aufgaben erledigen*

(E12) I am bleeped inappropriately  
*Ich werde unnötig angepiepst*