

Coping with stress and cognitive interference in student teachers performance as important factors influencing their achievement

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Abstract: The purpose of our study was to investigate the relations between student teachers' strategies for coping with stressful situations, cognitive interference factors and successfulness of presentation of seminar work. There were 135 student teachers participating in the study. At the beginning of the semester they were administered the Way of Coping Questionnaire (Folkman & Lazarus, 1988). After seminar presentation they reported on cognitive interference factors during their talk (distractive factors and intrusive thoughts). Different aspects of their performance were also evaluated by the teacher according to standard criteria. Significant correlations were observed between certain ways of coping, cognitive interference factors and success of performance. Further statistical analysis showed significant differences in experiencing distractive factors and intrusive thoughts during presentation between students with low, medium and high performance success. The importance of successful strategies for coping with verbal presentation and the implications for student teacher education are discussed.

Key words: coping with stress, cognitive interference, intrusive thoughts, achievement, verbal presentation, student teachers.

Spoprijemanje s stresom in kognitivna interferenca pri študentih kot pomembna dejavnika vpliva na njihove dosežke

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Povzetek: Namen raziskave je bil ugotoviti povezanost med strategijami spoprijemanja s stresnimi situacijami, kognitivno interferenco in uspešnostjo verbalne predstavitve seminarskega dela študentov bodočih učiteljev. V raziskavi je sodelovalo 135 študentov pedagoških smeri. Na začetku semestra so študentje izpolnjevali vprašalnik spoprijemanja s stresom (Ways of Coping Questionnaire; Folkman in Lazarus, 1988). Uporabili smo verzijo, ki ugotavlja posameznikovo običajno odzivanje na stresne situacije. Po predstavitvi seminarske teme so študentje poročali o kognitivni interferenci med nastopanjem (o prisotnosti motečih dejavnikov in vsiljivih misli). Prav tako je profesor po nastopu ocenil uspešnost

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nastopa posameznega študenta po vnaprej znanih kriterijih. Analiza rezultatov je pokazala pomembno povezanost med določenimi načini spoprijemanja s stresom, vidiki kognitivne interference in uspešnostjo predstavitve. Nadaljne statistične analize so pokazale pomembne razlike v različnih vidikih kognitivne interference med skupinami zelo, srednje in manj uspešnih študentov. V zaključku avtorici razpravljata o pomembnosti uspešnih načinov spoprijemanja s situacijo nastopanja in povežeta rezultate raziskave z vprašanji izobraževanja študentov pedagoške usmeritve.

Ključne besede: spoprijemanje s stresom, kognitivna interferenca, vsiljive misli, dosežki, besedna predstavitev, študenti

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The development of teaching competence represents an important part of student teacher education. Behavioural approach to teacher's professional development emphasizes training of specific skills as a necessary prerequisite for successful teaching. Cognitive approach to teacher training, on the other hand, is directed toward examining and modifying student teachers' cognitive structure and processes. The third approach, known as experiential approach tries to integrate cognitive, behavioural, and affective levels of student teachers' learning. Kolb (1984) defines learning as a process in which knowledge is acquired through experience transformation. Experience and its transformation are two basic learning elements. Learning, according to Kolb, consists of four phases: concrete experience, observation and reflection, abstract conceptualisation and testing in new situations. In experiential approach, one of the first student teachers' teaching experiences and also the first step in developing professional teaching skills is usually their presentation of project work in front of a large group of colleagues that is followed by professor's and colleagues' reflection on presentation. The purpose of others' feedback is to help student to become aware of his/her advantages in teaching, to direct student's attention to the skills which he/she should still working on, and to connect student's presentation with the concepts and theory of teacher education. These experiences are the basis for using thus improved skills and strategies in new situations (Peklaj, 1992).

Students' verbal presentation, that is, their performance in front of a large group and an authority (a professor), is important learning situation and also a very stressful one. Students have to show their intellectual and social competence in the presence of others. Verbal presentation in front of a large group is a typical social situation that can evoke social anxiety. Social anxiety is defined as a subjective experience of anxiety that can appear in actual or anticipated social evaluative situation (Puklek, 1997b). Students' verbal presentation has some characteristics which can evoke social anxiety (Buss, 1980; Zimbardo, 1977; Zimmerman & Martinez-Pons, 1990):

- the situation is usually novel situation;

- a speaker is in the centre of others' attention;
- there is no retreat in case of failure;
- a student will be evaluated after the presentation;
- a quality of presentation and an evaluation influence student's self-efficacy concerning his/her professional skills.

Another explanation for the fact that social evaluative situations could be a threatening experience for students (especially for the socially anxious ones) comes from the self-presentation model of social anxiety, proposed by Schlenker and Leary (1982). The social evaluative situation will be perceived as a threatening experience if an individual is highly motivated to make a preferred impression on real or imagined audience. At the same time, such an individual doubts in his/her ability to make a positive social impression and thus imagines self-debilitating evaluative reactions from others. Socially anxious students were found to be more disturbed and experienced more intrusive thoughts of negative self-evaluation and social comparison and evaluation in public performance than their socially non-anxious mates (Puklek, 1998a, b).

Verbal performance as a typical stressful situation elicits different coping strategies. The anticipation of performance outcomes is important factor influencing the subject's performance (Folkman & Lazarus, 1988). If it is positive, the situation will be perceived as a challenge and it will lead to task-relevant cognitive activity (Sarason, 1984). The individual will focus his/her attention on problem solving. On the other hand, if the anticipation of the outcome is negative, the situation will be perceived as a threat. In such case, the individual will perceive a discrepancy between demands of the task and his/her personal resources to accomplish them. The emotion-focused coping and task-irrelevant cognitions will be elicited (Boekaerts, 1993; Sarason, 1984).

A challenging performance situation for the student will probably elicit cognitions and behaviours directed toward successful task completion. The student will be attentive to the task requirements and will try to monitor his/her performance according to the situation demands. Task-involved orientation will probably lead to higher performance than ego-involved orientation where student is directed toward maintaining his/her well being, positive self-esteem and trying to cope with negative feelings in performance situation (Ames & Archer, 1988; Nicholls, 1984). A performance situation that is perceived as a threat elicits different task-irrelevant cognitions or intrusive thoughts (Puklek, 1998a; Sarason, 1984). Intrusive thoughts include thoughts about one's own inferiority, inadequacy, anticipation of failure, negative evaluation, humiliation in front of a group, anticipation of a negative self-presentation in a social group and task irrelevant thoughts or mind wandering. Some studies (e.g. Mikulincer, 1989; Sarason, 1984) showed that intrusive thoughts of negative self-evaluation and social comparison impaired task achievement. In addition, in one of our previous studies on intrusive thoughts in students teacher' public performance we found internal self-focusing factors as the most frequent distractive factors during performance. More than a half of students felt lack of or distrust in verbal competence, anticipated

failure or focused their attention on evident signs of anxiety while presenting the project work. The three most frequent intrusive thoughts were: “What do others think of my performance”, “I’m not relaxed” and “Colleagues who listen to me are bored” (Puklek, 1998b).

The purpose of the present study was to include some additional variables which can be associated with student teachers’ performance in experiential approach to teacher training. To supplement the study design of our previous work, we also included the achievement variable, that is, the students’ successfulness of their public presentation evaluated by the teacher. We hypothesised:

- positive correlations between emotion-focused coping strategies (distancing, escape-avoidance) and cognitive interference;
- negative correlations between task-oriented coping strategies (planful problem solving, confrontation) and cognitive interference ;
- positive correlations between task-oriented coping strategies and performance achievement;
- negative correlations between emotion-focused coping strategies and performance achievement;
- negative correlations between cognitive interference during performance and performance achievement;
- differences in usual ways of coping among students with different levels of performance achievement;
- differences in experiencing cognitive interference during performance among students with different levels of performance achievement.

Method

Participants

135 second year undergraduate student teachers (students of linguistics and social sciences) of Faculty of Arts in Ljubljana (115 female and 11 male, the data about gender were missing for 9 subjects). Female students represented the majority of the sample. However, women prevail at the linguistic and social science studies at the faculty.

Instruments

Ways Of Coping Questionnaire - WCQ (Folkman & Lazarus, 1988) measures the strategies which an individual usually uses in different stressful situations. Participants are required to indicate how they usually act in certain stressful situation on a four-point scale (0 - not at all, 3- usually). 66 items form 8 subscale: Confrontive

Coping (e.g., I expressed my feelings), Distancing (e.g., I behaved as nothing would have happened; I tried to forget everything), Self-control (e.g., I tried to keep my opinion for myself), Seeking Social Support (e.g., I tried to find professional help), Accepting Responsibility (e.g., I recognised that I give rise to the problem myself), Escape-Avoidance (e.g., I hoped that miracle will happen; I have slept more than usually), Planful Problem Solving (e.g., I focused on the problem), Positive Reappraisal (e.g., I have changed and became more mature). Cronbach's reliability coefficients for the subscales ranged from .61 to .79 (Folkman & Lazarus, 1988). In the present study, the Slovene translation of the questionnaire (Lamovec, 1994) was used. The alpha coefficients were somewhat lower than were reported by the authors of the questionnaire: Confrontive Coping .41, Distancing .60, Self-control .38, Social Support Seeking .74, Accepting Responsibility .51, Escape-Avoidance .68, Planful Problem Solving .61 and Positive Reappraisal .62.

Questionnaire of Distractive Factors and Intrusive Thoughts - QDFIT (Puklek, 1997a). It measures the situational and personal factors which disturb the verbal presentation of participants. The first part of the questionnaire contains 13 distractive factors which could be divided according to their content into three groups: external situational factors (e.g., new situation, presence of a professor), internal self-focusing factors (e.g., lack of verbal competence, anticipation of a failure, attention to evident signs of anxiety) and internal self-excusing factors (e.g., bad mood, fatigue, unpreparedness to presentation). Participants marked the presence (YES-NO) and in case of answer YES the intensity (5-point scale) of each disturbing factor (1- very little, 5- very much).

The second part of the questionnaire presents several intrusive thoughts. Participants indicate on a 5-point scale how often the intrusive thought was present during the presentation (1 - never present to 5 - present all the time). The intrusive thoughts can be divided into four groups:

- Intrusive thoughts of negative self-evaluation (6 items: I'm not relaxed; I'm confused; I'm not able to present the seminar well; etc.).
- Intrusive thoughts of social comparison and social evaluation (8 items: Others see I'm nervous; Colleagues from the group are more assertive than me; What do others think about my performance; etc.).
- Task-irrelevant intrusive thoughts (4 items: I thought about a certain past event; I thought about an event which is momentarily interesting for me; etc.).
- Task-relevant intrusive thoughts (5 items: I thought about the content of the seminar; I thought about what to change that things would go better; etc.).

Seminar Assessment Criteria contains 10 skills required for good presentation of the seminar work. They cover the two aspects of presentation: presenting the seminar theme (clear presentation, good structure, use of different AV tools, etc.) and stimulating the interaction with the group (maintain and direct attention with al-

ternating different methods, stimulate activity by discussion or work in groups, use of questions to the group). Each skill was assessed on the 5-point scale (1 - very poor to 5 - excellent). In further analysis the three scores were used: the sum of presenting criteria, the sum of interaction criteria and the total sum.

Procedure

At the beginning of the semester the students chose a seminar theme or project work and filled in the Ways of Coping Questionnaire (Folkman & Lazarus, 1988). We used the form that measures individual's usual style of coping with stress. During the semester the students worked on a seminar theme in groups of three to four students. They also had consultations with their mentor and were familiar with the criteria of good presentation. Each group presented their project work in the Educational Psychology course. During the presentation they were encouraged to use different methods of presentation and to work on an active participation of their colleagues. At the end of the presentation the group of presenters was evaluated by their colleagues and the professor. The professor also assessed each student's presentation according to the previously prepared Seminar Assessment Criteria. Immediately after the evaluation of presentation the students filled in the Questionnaire of Distractive Factors and Intrusive Thoughts (Puklek, 1997a).

Data were analysed by SPSS. Correlations between student's ways of coping (WCQ) and cognitive interference factors (QDFIT), between ways of coping and students' performance (seminar assessment criteria) and between cognitive interference factors and students' performance were calculated. In the next step, the students were divided into three groups according to their result on the total sum of performance evaluation criteria: low (1. quartile), medium (2. and 3. quartile) and high (4. quartile) performance group. The series of analysis of variance (ANOVA) were carried out to assess the difference between low, medium and high performance groups in their usual ways of coping and reports of disturbing factors and intrusive thoughts.

Results

Table 1 presents the correlations between different ways of coping with stressful situations and distractive factors and intrusive thoughts. Only a few correlations were significant with rather low intensity. Confrontive coping was positively correlated with task-relevant intrusive thoughts. Participants who usually try to solve their problem in an active manner had more thoughts related to the content of their presentation and to different ways of moderating and adapting their performance. As was hypothesised, distancing was positively correlated with distractive factors and task-irrelevant thoughts. In addition, it was negatively correlated with task-relevant thoughts.

Table 1: Correlations between students' strategies of coping with stressful situations and cognitive interference

<i>QDFIT</i>	<i>Ways of Coping Questionnaire</i>							
	<i>CON</i>	<i>DIS</i>	<i>SC</i>	<i>SSS</i>	<i>RA</i>	<i>E-A</i>	<i>PPS</i>	<i>PRE</i>
Distractive factors	.16	.21*	.04	.01	.21	.31*	.16	.06
Intrusive thoughts								
NSE	.15	.12	.12	-.04	.09	.36*	-.01	.01
SC/E	.14	.13	.18	.01	.09	.32*	.03	-.03
TI	.00	.35*	.00	-.09	-.03	.13	-.03	.01
TR	.20*	-.21*	.17	-.08	-.02	.20*	.07	-.04
AIT	.19	.08	.18	-.05	.07	.39*	.04	-.01

Note. CON = Confrontive Coping; DIS = Distancing; SC = Self-Control; SSS = Seeking Social Support; RA = Responsibility Accepting; E-A = Escape - Avoidance; PPS = Planful Problem Solving; PRE = Positive Reappraisal; QDFIT = Questionnaire of Distractive Factors and Intrusive Thoughts; NSE = Intrusive Thoughts of Negative Self-Evaluation; SC/E = Intrusive Thoughts of Social Comparison and Social Evaluation; TI = Task Irrelevant Intrusive Thoughts; TR = Task Relevant Intrusive Thoughts; AIT = All Intrusive Thoughts.

* $p < .05$

The students who usually try to distance themselves from the problem experienced more mind wandering during their verbal presentation and had less task-relevant thoughts that have a potential to improve performance. In accordance with the hypothesis, another emotion-focused way of coping – escape/avoidance strategy – was positively associated with the disturbing factors and intrusive thoughts. The students who usually use this way of coping in stressful situations listed more distracting factors and experienced more intrusive thoughts of negative self-evaluation and social comparison and social evaluation than the students who usually do not avoid the problem they have. At the same time, the students with the above mentioned coping strategy had more task-relevant thoughts which serve as a self-guidance in the performance. The hypothesis regarding the negative association between task-oriented ways of coping and cognitive interference in verbal presentation was not confirmed.

Table 2 presents the correlations between different ways of coping and evaluation of students' verbal performance assessed by the professor. In accordance with our hypothesis, the two ways of emotion-focused coping (i.e., distancing and escape-avoidance) were significantly negatively correlated with performance evaluation, albeit the correlations were rather low. The hypothesis regarding the positive association between task-oriented ways of coping and performance was not confirmed.

Table 3 contains correlations between distractive factors and intrusive thoughts experiencing during students' verbal presentation and students' achievement on the evaluation criteria. The results confirmed the proposed hypothesis. Students who

Table 2: Correlations between students' strategies of coping with stressful situations and performance evaluation

WCQ	Performance evaluation		
	Σ presenting criteria	Σ interaction criteria	Σ all criteria
Confrontive Coping	-.01	.01	.01
Distancing	-.20*	-.25**	-.23*
Self-Control	.04	.03	.04
Seeking Social Support	-.01	-.06	-.03
Accepting Responsibility	.00	-.05	-.02
Escape - Avoidance	-.13	-.24**	-.19*
Planful Problem Solving	.07	.01	.05
Positive Reappraisal	.16.	.04	.12

Note. WCQ = Ways of Coping Questionnaire.

* $p < .05$ ** $p < .01$

Table 3: Correlations between distractive factors and intrusive thoughts and performance evaluation

QDFIT	Performance evaluation		
	Σ presenting criteria	Σ interaction criteria	Σ all criteria
Distractive factors	-.33***	-.33***	-.34***
Intrusive thoughts			
Negative self-evaluation	-.28**	-.27**	-.29**
Social comparison/eval.	-.36***	-.37***	-.38***
Task irrelevant thoughts	-.04	-.10	-.07
Task relevant thoughts	-.10	.02	-.04
All intrusive thoughts	-.30**	-.27**	-.30***

Note. QDFIT = Questionnaire of Distractive Factors and Intrusive Thoughts.

* $p < .05$ ** $p < .01$ *** $p < .001$

reported more distractive factors and intrusive thoughts during their presentation had lower performance results. However, only the intrusive thoughts of negative self-evaluation and intrusive thoughts of social comparison and evaluation were significantly negatively related to the successfulness of their performance. The correlations between task relevant and task irrelevant intrusive thoughts and achievement in performance were not statistically significant.

Results of comparison between low, medium and high performing students according to their usual coping styles are shown in Table 4. Distancing showed the only significant difference among the three groups ($F(2, 115) = 3.22; p < .05$). The students with low performance level had the highest result in distancing and the stu-

Table 4: Means and SDs of ways of coping according to the students' level of performance

	Performance level		
	Low (N=36)	Medium (N=53)	High (N=33)
<i>WCQ</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Confrontive Coping	7.28 (2.57)	7.40 (2.43)	7.52 (2.57)
Distancing	7.03 (2.57)	6.87 (2.77)	5.48 (3.02)
Self-Control	10.38 (3.51)	11.60 (2.57)	10.41 (2.84)
Seeking Social Support	10.09 (3.48)	11.24 (3.21)	9.91 (3.54)
Accepting Responsibility	7.06 (1.82)	7.70 (1.95)	7.06 (2.07)
Escape - Avoidance	6.84 (3.98)	7.06 (3.55)	5.61 (3.10)
Planful Problem Solving	10.37 (2.80)	10.38 (2.33)	10.84 (3.05)
Positive Reappraisal	9.87 (3.02)	11.58 (3.30)	11.06 (3.26)

Note. WCQ = Ways of Coping Questionnaire.

dents with high performance level had the lowest one. Thus, the hypothesis about the different coping strategies in students with different successfulness in performance was not confirmed.

The comparisons among low, medium and high performing students according to their report of distractive factors and intrusive thoughts during verbal presentation are present in Table 5. The results confirmed our hypothesis regarding the presence of cognitive interference in students with different level of success in verbal presentation. Statistically significant difference among the three groups was found in students' listing of distracting factors ($F(2, 112) = 5.20; p < .01$). High performing stu-

Table 5: Means and SDs of distractive factors and intrusive thoughts according to the students' level of performance

	Performance level		
	Low (N=36)	Medium (N=53)	High (N=33)
<i>QDFIT</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Distractive factors	4.94 (1.97)	3.94 (2.12)	3.12 (2.68)
Intrusive thoughts			
Negative self-evaluation	12.62 (4.08)	11.88 (3.97)	9.47 (2.49)
Social comparison/ev.	17.43 (5.26)	15.36 (4.34)	12.87 (3.46)
Task irrelevant thoughts	5.21 (1.97)	4.92 (2.04)	4.87 (2.10)
Task relevant thoughts	17.14 (3.49)	15.43 (4.60)	15.83 (5.04)
All intrusive thoughts	52.88 (11.62)	47.97 (10.92)	43.03 (10.10)

Note. QDFIT = Questionnaire of Distractive Factors and Intrusive Thoughts.

dents reported the lowest level of distracting factors and low performing students reported the highest one. Statistically significant differences among groups were also found in intrusive thoughts of negative self-evaluation ($F(2, 103) = 6.39; p < .01$), intrusive thoughts of social comparison and evaluation ($F(2, 102) = 8.10; p < .001$) and in the sum of all intrusive thoughts ($F(2, 91) = 5.63; p < .01$). The results showed the same pattern in all three domains of intrusive thoughts. Low performing students reported the highest intensity of intrusive thoughts and high performing students reported the lowest one. No statistically significant differences were found among the three groups according to task relevant and task irrelevant intrusive thoughts.

Discussion

The purpose of our study was to investigate factors that can impair student teachers performance in verbal presentation of their work. Verbal presentation is part of student teachers' professional training which is based on experiential approach. We were especially interested in the relations between students' permanent style of coping with stress, distractive factors and intrusive thoughts during verbal presentation and students' successfulness in it. Unfortunately, we failed to confirm some of the given hypotheses.

Only a few significant correlations between different ways of coping and cognitive interference factors were found. As expected, distancing and escape-avoidance strategies of coping were related to disturbing factors and intrusive thoughts during students' verbal presentation. These two coping strategies are emotion-focused strategies that individuals use to reduce or deny the importance of the problem or find rationalisations for the causes of their failure. They can both stimulate thoughts which interfere with the task in actual performance. In accordance with the hypothesis, the results also showed positive relations between distancing and escape/avoidance strategies and lower performance quality. Confrontation as a problem-focused strategy elicited task relevant intrusive thoughts but had no relation with performance achievement. Participants with distancing and avoiding the problematic situations probably use more defence mechanisms, like denial, reduction of problem importance or escape from achievement situations which move them away from the task. The achievement results are thus less satisfying. On the other hand, confrontation with the problem leads to directing thoughts toward organisation and structure of the task but not necessary to high performance.

Nevertheless, the significant relations between emotion-focused coping strategies, cognitive interference and performance were rare and low. We also could not find support for the hypotheses regarding the associations of task-oriented coping strategies with distractive cognitive activity during presentation and more successful presentation. That could be the result of the fact that coping strategies are not stable personality traits and change with and within situation (Folkman & Lazarus, 1985,

1988). The application of Ways of Coping Questionnaire as a situational measure might show different results. Another reason for the low correlations could be found in low reliability of some WCQ subscales that can reduce the number of significant correlations (Bucik, 1997).

The quality of students' performance was affected by cognitive interference during presentation. The results are consistent with previous studies which confirmed the relations between cognitive interference and impaired achievement (Mikulincer, 1989; Sarason, 1984). The most detrimental intrusive thoughts were thoughts of negative self- and social evaluation. The group of low achieving students experienced the most above mentioned intrusive thoughts and the group of high achieving students the least. Students who think that they are not competent to accomplish their task successfully may put less effort in presenting their work. During the presentation they are preoccupied with negative thoughts about themselves instead of focusing on the task and such cognitive activity may affect their achievement. The connection between the perception of low self-efficacy and achievement was already confirmed in different subject areas (Pintrich & De Groot, 1990). In a presentation situation the most salient factor is a presence of the public. If the public (colleagues and a teacher) has a task to give a feedback to the performer it become even more important factor that can affect student's performance (Ames, 1992; Ames & Archer, 1998). The intrusive thoughts of colleagues' opinion about one's own performance, his/her thoughts about the poor impression on the professor and colleagues and the comparison with the presentation of others were found to be the most detrimental intrusive thoughts as well in our study.

Another result surprising on the first sight was that task-relevant intrusive thoughts and performance quality were not related. It seems that successful students present their work automatically and are not occupied with planing and task monitoring during presentation. Similar results about self-regulated mechanisms and achievement have also been found in other research (Carr, Alexander, & Folds-Bennett, 1994; Peklaj, 1998, Peklaj & Vodopivec, 1998).

Some implications for further research and teacher educational practice can be made from the results of the present study. In the future research our interest should be directed toward improvement of metric characteristics of coping with stress measures. The use of a situational measure of coping in a specific evaluative situation is suggested. Some other factors that can impair student performance should also be included in the research, such as social anxiety, self-efficacy believes, different aspects of motivation, control of previous experiences with presentations etc. Some implications for student teachers' education can be derived from the research as well. As teachers, we can take some steps to make student's presentation less stressful and more predictable. The successfull presentation can be achieved through careful planing of presentation, consultations and teacher's help and previous preparation in well-known situations (e.g., at home, in group of friends). The evaluation of presentation should be directed toward mastering of different professional skills, cri-

teria for evaluation should be known in advance and competition between students and social comparison should not be salient. The evaluation situation ought to be more seen as a peer feedback and a possibility to improve professional skills in a non-threatening experiential situation.

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