

## Who Wants to Hear Bad News? How the Epistemic Perspective Determines the Perception of Peer Feedback

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**Abstract:** Processing feedback from peers is an essential part of learning through peer feedback. However, if a feedback message is critical about the students' initial task solution, students might perceive it as inadequate and not process it further. Based on multiple document research, we assume that epistemic perspectives (i.e., absolutism, multiplism, and evaluativism) determine as how adequate students perceive feedback in case it conflicts with their initial solution. We asked 254 pre-service teachers to analyze a classroom case vignette, provide feedback to each other, and revise their case analysis. Linear mixed models indicated that the lower students' absolutism or evaluativism was, and the more their feedback contained criticism, the less adequate they perceive it. Multiplism did not interact with criticism. We conclude that the effect of absolutism might depend on the identification with one's initial solution, and that evaluativism helps to value criticism for it containing new information.

### Rationale of this paper

Peer feedback is an effective method to foster learning, on average even more powerful than feedback from teachers, though its effects vary in recent meta-analyses, ranging from large negative to large positive effects (e.g., Double et al., 2020). In this paper, we address one potential source of this variance: the students' epistemic perspective, that is, the way how students think about the nature of knowledge and its justification (Barzilai & Weinstock, 2015). This is the rationale: Feedback comprises potentially valuable new information, especially if it is critical. However, criticism is most likely to conflict with students' original viewpoints. Thus, students might tend to reject the feedback as inadequate, which should depend on their epistemic perspective as it determines how learners handle conflicting information (Bråten et al., 2013). To sum up, we argue that peer feedback might not work for everyone to the same extent because individuals differ in how they process the feedback they receive (Lui & Andrade, 2022). The way they process that feedback might be influenced by their epistemic perspectives.

### The individual in the peer feedback process

A learning scenario which contains peer feedback typically includes the following steps (Bauer et al., 2023): First, students create an initial solution to a task. Second, the initial solutions are distributed among peers and peers provide each other with feedback. Third, students receive feedback from their peers and process it. Fourth, they revise their initial solution based on the feedback they received.

Thus, to benefit from it, processing the feedback from peers thoroughly is crucial. Yet, if students deem the feedback inadequate (Strijbos et al., 2021), it is unlikely that they are motivated to revise their initial solution and consider the feedback content thereby. For this reason, it is important that students appraise the feedback they receive as objectively correct and only dismiss it if it does not contain any helpful comment at all. However, students' perception of the feedback they receive is likely filtered through their individual epistemic perspectives (Barzilai & Weinstock, 2015). As feedback comprises information intended to be integrated into one's knowledge, epistemic perspectives are influential because they determine how one thinks about knowledge and its justification (Barzilai & Weinstock, 2015). Following Barzilai and Weinstock (2015), there are absolutist, multiplist, and evaluativist perspectives. An absolutist perspective sees the truth as certain and objectively available in the external world, whereas a multiplist perspective views the truth as uncertain and subjective. Holding an evaluativist perspective, finally, should lead the learner to acknowledge that truth is not easily objectively available but has to be concluded by interpretation of data based on criteria (Barzilai & Weinstock, 2015).

### Epistemic perspectives and feedback

In previous studies, epistemic beliefs' relation with peer feedback behavior varied (e.g., Noroozi, 2023). However, these studies did not consider how critical peers' feedback was. To make assumptions on how students handle critical feedback they receive, we can borrow from research on multiple documents. There, evaluativism yields the best integration and comprehension of conflicting texts, whereas multiplism performs worst (e.g., Bråten et

al., 2013). In peer feedback, students have to deal with multiple documents as well: their own initial task solution and the corresponding feedback message. These documents might agree or take conflicting viewpoints.

Consequently, the epistemic perspective should matter especially when the feedback does not agree with one's initial solution (Barzilai & Eshet-Alkalai, 2015): As an absolutist stance assumes that only one of two conflicting viewpoints can be true, and as it is likely that the own perspective is preferred, critical feedback should be less accepted. In contrast, as a multiplist perspective entails that it is impossible to find the objective truth, every viewpoint is a viable opinion. Then, it should not matter whether feedback favors one's solution or not. Third, as an evaluativist perspective means that data should be interpreted based on criteria, students should appraise feedback based on the quality of its reasoning independent from whether it is critical or not. In the following, we test whether these interactions between epistemic perspectives and the extent of criticism in feedback messages predict how adequate students perceive the feedback in a peer feedback environment.

## Method

### Sample

A sample of 254 pre-service teachers (mean age = 22.56,  $SD = 4.30$ ; 77.95% female) in their  $M = 4.61$  semester ( $SD = 1.20$ , about the middle of studies) from majors in elementary school education (55.12%) and different variants of secondary school education participated in the study. The peer feedback scenario was a mandatory part of a course on educational psychology. However, participation in the scientific data collection was voluntary.

### Procedure

Participants studied over three weeks within a digital learning environment that was designed to help them acquire the skill to reason about teaching problems in an evidence-informed manner (Greisel et al., 2022). In Week 1, the students answered a questionnaire regarding their epistemic perspectives and analyzed a case vignette of a lesson in which a teacher has problems such as students not talking to each other during collaborative learning. Their task was to identify and describe each problem, explain the problem with matching theoretical concepts, derive a goal, and develop a plan for teacher action. The students were supported with summaries of educational theories, which matched the problems in the case, and a description and a worked example explaining the steps they were asked to perform in their analysis. In Week 2, students rated the quality of the case analyses from two randomly assigned peers and produced written feedback messages. In Week 3, the feedback messages were anonymously delivered, students rated and processed their feedback, and then revised their case analysis.

### Instruments

To assess epistemic perspectives, we used items from the Epistemic Thinking Assessment (Barzilai & Weinstock, 2015), which comprises 7 questions with 3 items each which represent *absolutism*,  $\alpha = .69$ , *multiplism*,  $\alpha = .60$ , and *evaluativism*,  $\alpha = .69$ , answered on a Likert-scale from 1 = *do not agree at all* to 6 = *completely agree*. A sample question was “Is there an answer to how problematic teaching situations can be solved?” accompanied by these items “Eventually there will be one right answer” (absolutism), “In principle, it is impossible to know the right answer” (multiplism), “There may be multiple right answers but they are not equally right” (evaluativism).

The extent of criticism in a feedback message was measured indirectly. Feedback providers assessed the quality of the initial solution by indicating on five items if the peer was able to analyze the case in an evidence-informed manner,  $\alpha = .89$ , using the item stem, “Overall, my fellow student succeeded, using the ICAP model and cognitive load theory, in...” (sample item: “explaining instructional problems correctly”). The less participants agreed on a Likert-scale from 1 = *not at all true* to 5 = *completely true*, the more likely it is that their feedback would contain criticism to a larger extent. Raw data were reversed to ease interpretation (higher values equal higher criticism). These values were used twice to measure (a) the criticism participants received and (b) the criticism participants provided to their peers. The latter was only used as covariate in all subsequent regressions to control for the quality which the other case analyses had which a student provided feedback for.

Perceived adequacy of feedback was measured with the Feedback Perception Questionnaire (Strijbos et al., 2021). We computed a total scale value based on the dimensions *fairness* (“I would consider this feedback fair”), *usefulness* (“I would consider this feedback useful”), and *acceptance* (“I would accept this feedback”) with three Likert-scaled items with  $\alpha = .93$ .

## Results

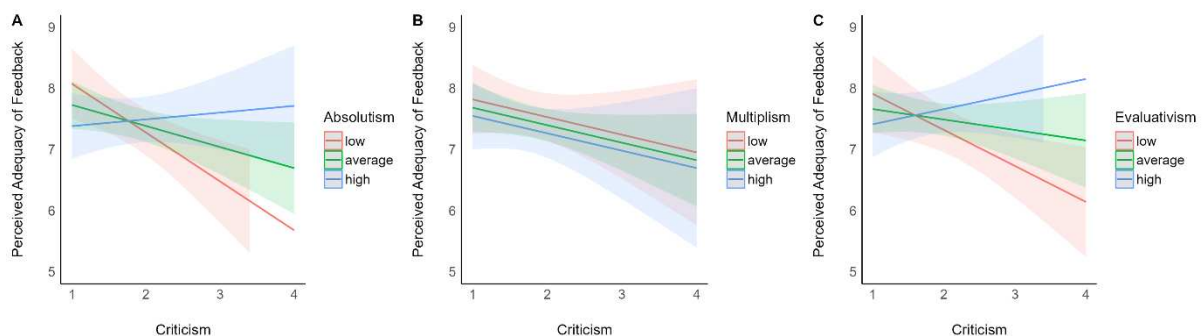
Descriptives showed that students held mostly evaluativist perspectives,  $M = 4.31$  ( $SD = 0.64$ ), compared to absolutism,  $M = 2.74$  ( $SD = 0.72$ ) and multiplism,  $M = 2.93$  ( $SD = 0.63$ ), and that they perceived feedback they

received as rather adequate,  $M = 7.29$  ( $SD = 1.25$ ). Perceived adequacy of feedback was not associated with criticism,  $M = 2.03$  ( $SD = 0.75$ ), independent from whether calculated as bivariate Pearson correlation with the mean of both feedback perceptions,  $r = .08$ ,  $p = .327$ , or calculated as multilevel regression,  $\beta = -0.14$ ,  $p = .104$ . Regarding the main hypotheses, we calculated multilevel regressions as each participant received up to two feedback messages. The interaction effects of feedback criticism with absolutism,  $\beta = -0.23$ ,  $p = 0.008$ , and evaluativism,  $\beta = -0.21$ ,  $p = 0.015$ , were statistically significant and negative, whereas criticism and multiplism did not interact,  $\beta = -0.001$ ,  $p = 0.993$  (see Table 1 and Figure 1). That is, the less absolutistic students' perspectives were, the less adequate they perceived critical feedback. The same is true for evaluativism. In contrast, students perceived critical feedback independently from their multiplistic perspective.

**Table 1**  
*Multilevel Regression of Perceived Adequacy of Feedback on Epistemic Perspectives and Feedback Criticism*

Predictors	Model 1		Model 2		Model 3	
	<i>b</i> ( <i>SE</i> )	<i>p</i>	<i>b</i> ( <i>SE</i> )	<i>p</i>	<i>b</i> ( <i>SE</i> )	<i>p</i>
(intercept)	11.69 (1.47)	<0.001	9.14 (1.94)	<0.001	13.42 (2.91)	<0.001
criticism of peers' solutions	-0.33 (0.20)	0.098	-0.26 (0.20)	0.203	-0.30 (0.20)	0.127
criticism	-2.03 (0.67)	<b>0.003</b>	-0.30 (1.03)	0.774	-3.30 (1.26)	<b>0.010</b>
absolutism	-1.08 (0.47)	<b>0.021</b>				
absolutism * criticism	0.62 (0.23)	<b>0.008</b>				
multiplism			-0.23 (0.64)	0.722		
multiplism * criticism			0.00 (0.35)	0.993		
evaluativism					-1.13 (0.63)	0.074
evaluativism * criticism					0.71 (0.29)	<b>0.015</b>
<i>Random Effects</i>						
$\sigma^2$	1.38		1.48		1.49	
$\tau_{00}$	0.74 <small>t11fdn</small>		0.73 <small>t11fdn</small>		0.60 <small>t11fdn</small>	
ICC	0.35		0.33		0.29	
N	104 <small>t11fdn</small>		104 <small>t11fdn</small>		104 <small>t11fdn</small>	
Observations	146		146		146	
Marginal $R^2$ / Conditional $R^2$	0.076 / 0.400		0.034 / 0.351		0.080 / 0.345	

**Figure 1**  
*Perceived Adequacy of Feedback Predicted by an Interaction of Epistemic Perspectives and Criticism*



## Discussion

In order to foster learning, feedback from peers needs to be processed thoroughly (Lui & Andrade, 2022). This is only likely if students consider the feedback they receive as adequate (Strijbos et al., 2021). However, we assumed that this depends on the extent of criticism the feedback contains, moderated by learners' epistemic perspectives.

First, we hypothesized that an absolutist perspective should make learners prone to favor their own perspective when viewpoints are conflicting (Barzilai & Eshet-Alkalai, 2015) because if only one viewpoint can be true, then favoring the own viewpoint is more consistent and takes less effort. However, we found the opposite, that is, only students low on absolutism seem to reject critical feedback. This indicates that favoring the own viewpoint in case of conflicting viewpoints is not generally true. More specifically, more able students provide

more critical feedback regarding substantive issues (Patchan et al., 2013). Therefore, the more critical feedback might also have been more elaborated and better justified, thus might have seemed more trustworthy. For this reason, absolutistic students might have picked the external viewpoint instead of their own when pressured to decide because of conflicting positions. Second, we hypothesized that a multiplist perspective would help students to ignore whether the feedback they receive is critical of their work (Barzilai & Eshet-Alkalai, 2015). However, as criticism was not associated with perceived adequacy even when multiplism was not considered, the potential of a multiplist perspective to qualify other opinions was obsolete. Third, we hypothesized that an evaluativist perspective would render students' feedback appraisal independent of the amount of criticism contained in the feedback because such a perspective should emphasize evaluation based on criteria (Barzilai & Eshet-Alkalai, 2015), that is, the quality of argumentation should matter more than the valuation itself. Yet, we found that the more evaluativistic students' perspective was, the more they favored critical feedback. This also makes sense from an evaluativistic standpoint, as agreement with one's own position might not provide new insights, whereas critical and conflicting positions might provide the feedback recipient with new information. As evaluativists base their perceptions of true and false on data, new information might be considered beneficial in its own right.

## Limitations and conclusions

Of course, this study is not without limitations. First, the factorial validity of the measurement of epistemic perspectives was not satisfying. Second, we did not directly measure the extent of criticism in the feedback messages. Thus, some meaningful covariation of true feedback content and epistemic perspectives might be lost. However, both limitations would typically yield lower correlations and obscure effects. Therefore, the reported effect sizes might constitute lower boundaries of the real effects rather than exaggerations. Third, self-reports might be biased towards social desirability masking negative reactions to criticism.

Theoretically, our results imply that theory regarding the effects of an absolutist perspective should integrate how strongly one identifies with one's own viewpoint or prior solution as a moderator (Barzilai & Eshet-Alkalai, 2015), which constitutes a mechanism that has not been considered before in this field (e.g., Noroozi, 2023). Practically, students often hold back criticism because they worry that critical arguments would not be valued by the feedback recipients (Vanderhoven et al., 2015). However, our results could be used to encourage students to be thorough and critical. Teachers could scaffold high-quality criticism, for example, by providing evaluation criteria or sample solutions which students can use to compare their peers' work with.

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