Fostering epistemic beliefs in psychology students: A field-experimental study

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Epistemic beliefs

- Ideas about knowledge and knowing in a certain domain or field (Hofer & Pintrich, 1997); usually assumed to develop following this sequence: (Kuhn, 1991)
  - **Absolutism:** A view of scientific knowledge as certain and absolute: An ultimate truth exists and experts can ultimately get to it.
  - **Multiplicism:** A view of scientific knowledge as inherently subjective: Truth does not exist and everything is subjective (extreme form).
  - **Evaluativism:** Contextually adaptive view: Depending on the issue in question, knowledge is (un)certain to different degrees.
- Studying Psychology might promote multiplicistic beliefs due to frequent confrontations with contradictory theories and findings
  → Risk of developing highly generalized multiplicistic beliefs ("In Psychology, everything is subjective!").

Intervention goal

- In order to **promote the shift from multiplicistic to evaluativistic beliefs**, the following ideas should be conveyed:
  - Existing theories might be challenged by further research.
  - Inconsistencies and contradictions between different theories are central for theory building and research progress.
  - Context-dependent weighting of different theories regarding their value is nevertheless possible.

Method

Participants and procedure

- Field experimental study, pre- & posttest (November-December 2014)
- *N* = 81 psychology freshmen (age: *M* = 20.38; *SD* = 2.36; 84% females)
- Intervention group, learning strategy intervention control group, untreated control group (*n* per group = 27)
- **Didactic approach:** Controversial findings were presented (short texts) and discussed in small groups (*n* ≈ 6) with regard to intervention goals.

Sample intervention text

Researcher A works for the Department of Educational Psychology at Franzenheim University. He develops a new teaching method ("Learning with pictures") and evaluates its effects in a study with 160 second graders from three different schools. Compared to "conventionally" taught pupils, the new teaching method has very positive effects on pupils' learning. The researcher recommends the new teaching method to other teachers.

His colleague, Researcher B, examines the new teaching method in another study. Compared to "conventionally" taught pupils, no effects are found, neither in a group of 120 sixth graders at secondary schools (two different schools) nor in a group of 70 high school students. The researcher strongly advises teachers against using the new teaching method.

Principal Measure: EBI-AM (Peter et al., under review)

- 23 generalized epistemic statements to be rated on 5-point Likert scales:
  - **Absolute scale:** "There is always a true answer to questions in this subject."
  - **Multiplicistic scale:** "In this subject, only uncertainty appears to be certain."
- **Special twist:** Low agreement to both types of generalized statements indicates evaluativism (contextually adaptive view on knowledge).
- **Evaluativism indicator**: mean of both scales, z-standardized and multiplied by minus one: Higher scores = stronger evaluativistic beliefs

Other Measures

- FREE (Krettenauer, 2005)
- CAEB (Stahl & Bromme, 2007)

Results

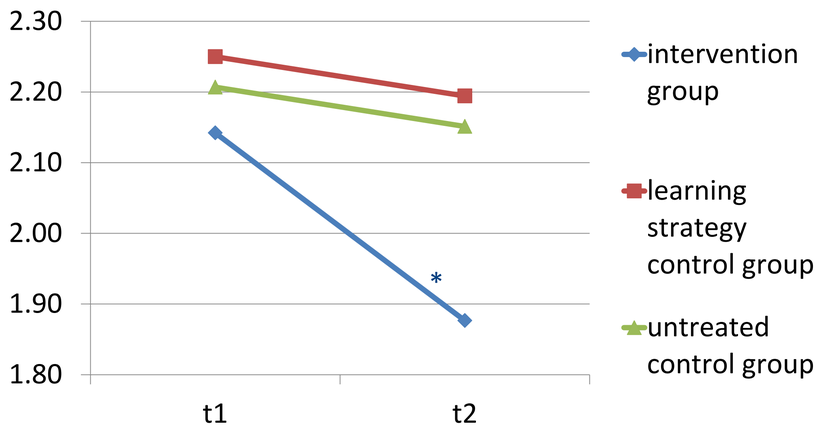

Fig. 1. Changes in **absolute beliefs** (EBI-AM) from pretest (t1) to posttest (t2)
time*group[1]**:** $F(2, 78) = 3.45$; $p < .05$; $\eta^2 = .08$; $^*p < .05$.

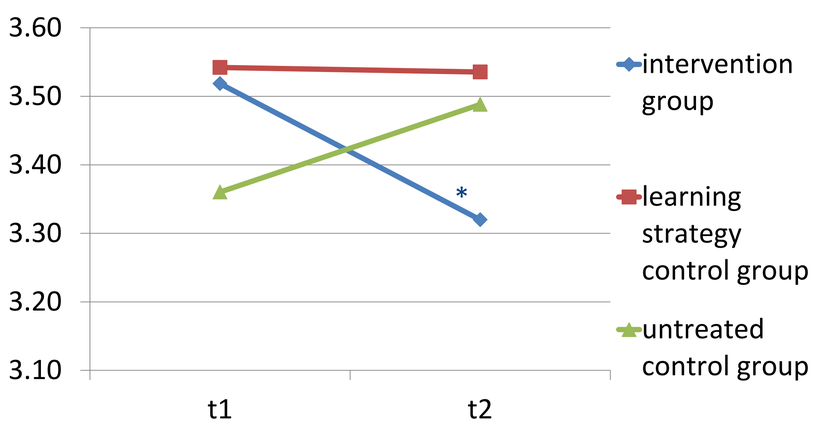

Fig. 2. Changes in **multiplicistic beliefs** (EBI-AM) from pretest (t1) to posttest (t2).
time*group[1]**:** $F(2, 78) = 4.52$; $p < .05$; $\eta^2 = .10$; $^*p < .05$.

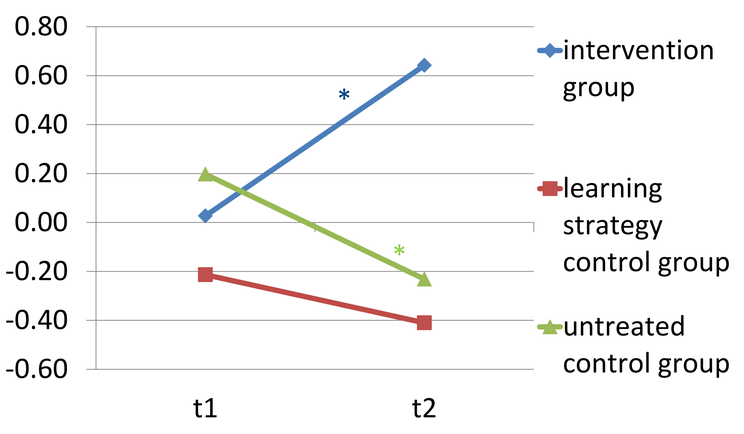

Fig. 3. Changes in **evaluativistic beliefs** (EBI-AM) from pretest (t1) to posttest (t2).
time*group[1]**:** $F(2, 78) = 8.33$; $p < .001$; $\eta^2 = .18$; $^*p < .05$.

[1]Data analysis via repeated measures ANOVAS (time*group), post-hoc testing by univariate repeated measures ANOVAS

Further results and conclusions

- Results regarding the FREE questionnaire less robust; no significant effects on the CAEB (measures not suited for our purposes?)
- Sustainability of intervention effects? Disappointing results on a follow-up measurement one semester later (May 2015) → reversion to initial beliefs
- Intervention concept is suitable to initiate a short-term change in epistemological beliefs towards evaluativism → necessity of refreshing sessions?
- Moderator variables of intervention effectiveness (e. g., need for cognitive closure)? (Rosman et al., under review)

References

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