

Changes of epistemological beliefs in the context of information literacy instruction

Johannes Peter, Nikolas Lechner, Anne-Kathrin Mayer & Günter Krampen

28th International Congress of Applied Psychology



1. Development of epistemological beliefs
2. Epistemological beliefs and information literacy instruction
3. Empirical study: Methods and results
4. Discussion

- Defined as individuals' conceptions about knowledge and knowing (Hofer, 2001)
- E.g. certainty of knowledge – is knowledge conceptualized rather to be certain or uncertain?
- Target of research due to the significance e.g.
 - for information processing (Kardash & Howell, 2000),
 - learning (e.g. Cano, 2005), and
 - information behavior (Bråten & Strømsø, 2010)

- Basis of recent research: Framework by Perry (1970)

Absolute beliefs:

- Right/wrong
- Truth/untruth

Relativistic beliefs:

- Opinions equally valid
- Nothing is certain

Commitment with relativism:

- Opinions differently valid
- Certain to different degrees



Is there an existing truth?



Should relativism be relativized?

- Epistemological beliefs play a crucial role e.g. in understanding/integrating information (e.g. Bråten & Strømsø, 2010; Schommer, 1990)
- Changes in epistemological beliefs in the context of
 - information-seeking, e.g. when subjects deal with conflicting information (Kienhues, Stadler & Bromme, 2011)
 - epistemological challenging short-time interventions (refutational texts; Kienhues, Bromme & Stahl, 2008)

- Information literacy instruction for students
 - another type of epistemological challenging intervention?
- Information literacy is defined as the abilities
 - to define an information problem,
 - to find and to access information,
 - to evaluate information, and
 - to process information (ACRL, 2010).

- Information literacy instruction
 - might induce reflection about knowledge and knowing
 - directs the attention to the diversity of (scientific) information
 - might promote reflection about evaluation criteria (e.g. bibliometrics)

- Blended-learning training:
 - Online learning for the preparation of the contents (approx. 7 h)
 - Face-to-face learning for questions, discussions and exercises (approx. 3 h)
- Contents:
 - Background knowledge (e.g. databases, scientific procedures)
 - Applied knowledge (e.g. sophisticated use of search interfaces)

- Participants
 - $N = 67$ undergraduate psychology students ($n = 34$ first year; $n = 33$ second year)
 - Sample split into two groups (randomization)
- Procedure



- Epistemological statement + Likert scale (Peter, 2014)
 - Absolute statement: “If views held by two researchers in this discipline are contradictory, one of the views must be wrong.” [1 = disagree; 5 = agree]
 - Relativistic statement: “In this subject, what is regarded as correct by researchers, changes permanently.” [1 = disagree; 5 = agree]
- Absolute and relativistic scale

Assessment of epistemological beliefs

	Absolute beliefs	Relativistic beliefs	Commitment with relativism
Absolute statements			
Relativistic statements			



→ **agreement**



→ **disagreement**

- Absolute and relativistic items refer to different factors
- Only marginal relationships between the two scales can be assumed (Peter et al., 2014)

- Internal consistency

- Absolute scale: $\alpha(T1) = .72$; $\alpha(T2) = .75$; $\alpha(T3) = .67$

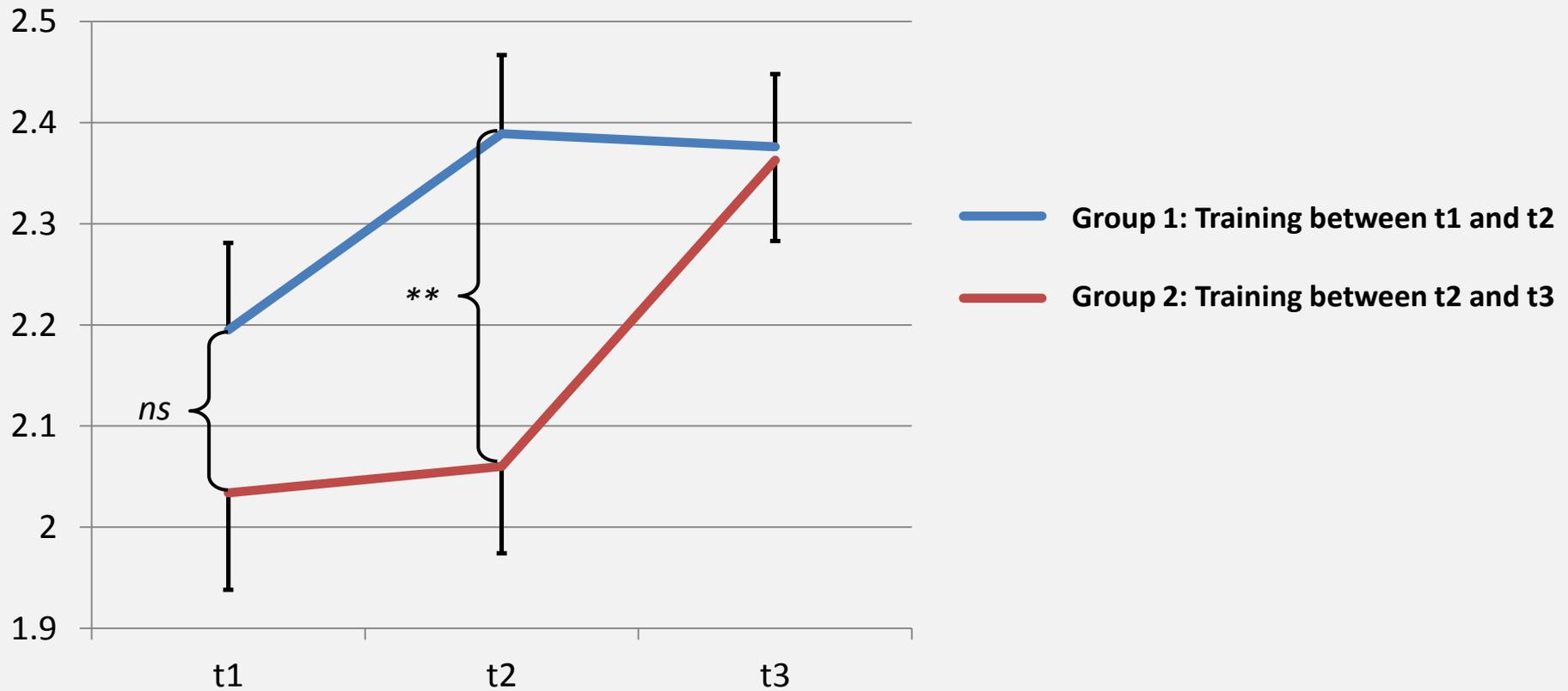
- Relativistic scale: $\alpha(T1) = .56$; $\alpha(T2) = .66$; $\alpha(T3) = .70$

- Re-test

	ABS T1	ABS T2	ABS T3	REL T1	REL T2	REL T3
ABS T1	1.00					
ABS T2	0.65***	1.00				
ABS T3	0.54***	0.66***	1.00			
REL T1	0.12	0.10	-0.04	1.00		
REL T2	0.13	-0.03	-0.18	0.58***	1.00	
REL T3	0.06	-0.06	-0.19	0.66***	0.77***	1.00

- Repeated measures ANOVAs (controlled for study progress and gender)
- Absolute beliefs:
 - Within: $F(62, 2) = 1.16$; ns; part. $\eta^2 = .04$
 - Between: $F(63, 1) = 2.70$; ns; part. $\eta^2 = .04$
 - Interaction: $F(62, 2) = 6.52$; $p < .01$; part. $\eta^2 = .17$
- Relativistic beliefs
 - Within: $F(62, 2) = 1.54$; ns; part. $\eta^2 = .05$
 - Between: $F(63, 1) = 0.31$; ns; part. $\eta^2 = .01$
 - Interaction: $F(62, 2) = 0.00$; ns; part. $\eta^2 = .00$

Change in absolute beliefs



- Agreement to absolute statements significantly increases
- Agreement to relativistic statements is not affected by the training
→ Epistemological confusion?

	Absolute beliefs	Relativistic beliefs	Commitment with relativism
Absolute scale			
Relativistic scale			

- The short-term effect might have been caused by the epistemological nature (cf. Bromme, 2010) of the learning contents:
 - Instruction of clear methods and strategies to search for literature
 - Manuals for the usage of search interfaces
 - Bibliometrics (although their limitations were discussed)
- Results reveal that information literacy instructions are epistemologically challenging
- Long-term changes?

- Association of College and Research Libraries (ACRL). (2010). *Psychology information literacy standards*.
- Bråten, I., & Strømsø, H. I. (2010). When law students read multiple documents about global warming: examining the role of topic-specific beliefs about the nature of knowledge and knowing. *Instructional Science*, 38(6), 635–657.
- Cano, F. (2005). Epistemological beliefs and approaches to learning: Their change through secondary school and their influence on academic performance. *British Journal of Educational Psychology*, 75(2), 203–221.
- Hofer, B. K. (2001). Personal epistemology research: Implications for learning and teaching. *Educational Psychology Review*, 13(4), 353–383.
- Kardash, C. M., & Howell, K. L. (2000). Effects of epistemological beliefs and topic-specific beliefs on undergraduates' cognitive and strategic processing of dual-positional text. *Journal of Educational Psychology*, 92(3), 524–535.
- Kienhues, D., Bromme, R., & Stahl, E. (2008). Changing epistemological beliefs: The unexpected impact of a short-term intervention. *British Journal of Educational Psychology*, 78(4), 545–565.
- Kienhues, D., Stadler, M., & Bromme, R. (2011). Dealing with conflicting or consistent medical information on the web: When expert information breeds laypersons' doubts about experts. *Learning and Instruction*, 21(2), 193–204.
- Perry, W. G., JR. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. Rinehart and Winston, Inc: Holt.
- Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology*, 82(3), 498–504.