On the Mutual Relationship of Epistemological Beliefs and Information-Seeking Behavior: an Experimental Approach

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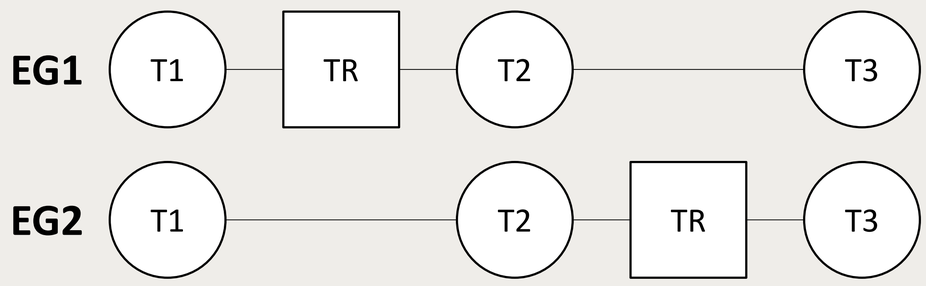
Background

- Information-seeking behavior (ISB) or information problem solving is conceptualized as a complex cognitive process. ISB-related skills are proposed to play a crucial role in the self-regulated acquisition of knowledge in higher education (Joo, Bong, & Choi, 2000). Despite the importance of adequate ISB for studying successfully, a number of studies reveal that ISB skills among students are often poor (Maughan, 2001).
- However, the acquisition of knowledge and ISB are influenced not only by particular skills, but also by individual attributes such as epistemological beliefs (EB; Whitmire, 2003). EB are defined as individuals' conceptions about knowledge and knowing (Hofer & Pintrich, 1997).
- Studies show that students with more sophisticated epistemological beliefs are less likely to oversimplify complex issues, and to draw inappropriate conclusions as a consequence (Schommer, 1990). They are more capable of handling contradictory information (Whitmire, 2004) and more likely to judge the quality of information and its sources contextually (King & Kitchener, 1994).
- Kienhues et al. (2008) suggested that EB do not only affect learning, but are also affected by learning. They reported changes of subjects' epistemological beliefs due to participation in a short-term intervention comprising epistemological challenging instructions.
- Regarding these considerations, it seemed meaningful to examine the mutual relationship of EB and ISB. For this purpose, a blended-learning training for the improvement of skills referring to ISB was developed and evaluated (1) in an experimental study. Many contents of the ISB-training (e.g. bibliometrics) were assumed to be epistemological challenging. Thus, EB were hypothesized to be changed in the context of the training (2). Additionally, it was hypothesized that students with more sophisticated epistemological beliefs would achieve larger improvements in ISB skills (3).

Methods

- The training (TR) was conducted twice, in both cases over a period of two weeks. Participants were divided into two experimental groups, EG1 (n = 37) and EG2 (n = 30). 78% were female, the mean age was 21.67 (SD = 2.38). All participants were psychology students, in the first or second year of study.
- The training included online and classroom modules. Additionally, the participants had to solve exercise tasks.
- ISB skills and EB were measured at three times (T1, T2, T3). EG1 attended the training between T1 and T2; EG2 attended the training between T2 and T3. ISB was measured by a knowledge test (α(T1) = .63; α(T2) = .80; α(T3) = .55; Leichner et al., 2013), and a set of search tasks which were scored with regard to outcome quality and adequacy of the search procedure. EB was measured by a self-developed questionnaire, including an absolute scale (α(T1) = .71; α(T2) = .75; α(T3) = .70) and a relativistic scale (α(T1) = .55; α(T2) = .66; α(T3) = .70). Disagreement with absolute as well as relativistic statements was interpreted to reflect epistemological sophistication (Peter et al., in prep).



Results

Table 1: Changes of ISB skills in the context of the training

		Mean (Standard deviation)			Repeated-measures ANOVA (measure * group interaction)		
		T1	T2	T3	F	p	η^2
knowledge test score	EG1	0.60 (0.07)	0.77 (0.06)	0.76 (0.06)	73.13	<.01	.53
	EG2	0.61 (0.07)	0.62 (0.06)	0.75 (0.05)			
task outcome score	EG1	4.58 (1.96)	6.38 (1.98)	7.81 (1.77)	5.45	<.01	.08
	EG2	5.18 (1.67)	4.97 (1.35)	7.67 (1.84)			
search procedure score	EG1	6.07 (1.86)	11.39 (1.50)	10.99 (1.18)	37.38	<.01	.36
	EG2	6.63 (1.87)	7.68 (1.79)	9.88 (1.63)			

Table 2: Changes of EB in the context of the training

		Mean (Standard deviation)			Repeated-measures ANOVA (measure * group interaction)		
		T1	T2	T3	F	p	η^2
absolute beliefs	EG1	2.27 (0.50)	2.45 (0.53)	2.43 (0.40)	6.25	<.01	.16
	EG2	2.14 (0.48)	2.13 (0.38)	2.40 (0.49)			
relativistic beliefs	EG1	3.38 (0.39)	3.24 (0.48)	3.27 (0.48)	0.40	n.s.	.00
	EG2	3.33 (0.45)	3.18 (0.46)	3.20 (0.42)			

Graph 1: Changes of absolute beliefs in the context of the training

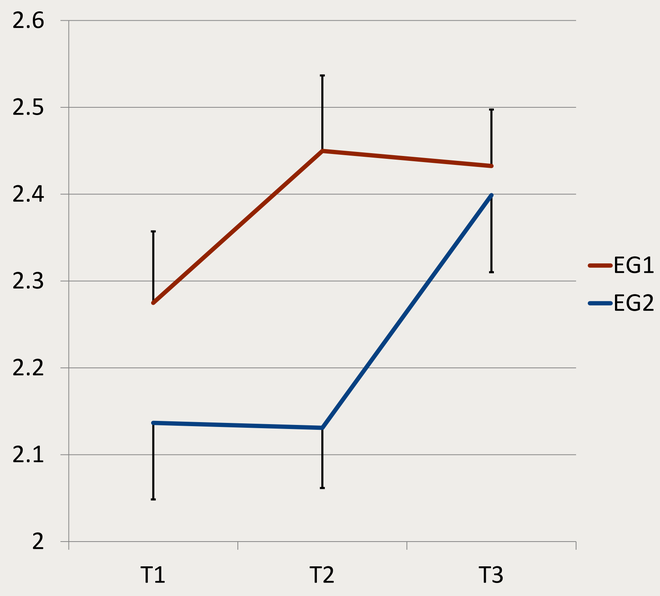


Table 3: Correlations of changes of ISB skills (T1 vs. T3) and EB (T1)

		knowledge test score	task outcome score	search procedure score
absolute beliefs	*r*	**-.23***	-.03	-.03
relativistic beliefs	*r*	**-.24***	-.02	.09

- All scores referring to ISB skills improved markedly in the context of the training.
- Absolute beliefs increased significantly depending on training participation.
- Participants who agreed less with absolute and relativistic beliefs achieved significantly more improvement in knowledge test scores.

Discussion

- The training was positively evaluated by ISB measures. The declarative (knowledge test) and the procedural (task outcome and procedure scores) knowledge aspects of ISB both improved.
- Agreement to absolute beliefs significantly increased in the context of the training. This finding suggests contents of ISB-training to be epistemological challenging. The increase of absolute beliefs might have been caused e.g. by contents such as bibliometrics, which provide seemingly unambiguous criteria to justify knowledge. Although the training included discussions reflecting the limitations e.g. of bibliometrics, relativistic beliefs were not affected by the training. Futher research on this issue might be helpful to provide more differentiated information about how the education of certain ISB contents affects EB.
- Students with more sophisticated EB achieved better training results only regarding the declarative knowledge test. One reason for this may be that EB are more closely related to abstract content than to direct behavior.

Literature

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