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To cite this article: Christian Tarchi (2020): Prompting Readers to Plan Might Negatively Affect Their Comprehension of Multiple Documents, Journal of College Reading and Learning, DOI: [10.1080/10790195.2020.1823910](https://doi.org/10.1080/10790195.2020.1823910)

To link to this article: <https://doi.org/10.1080/10790195.2020.1823910>



Published online: 07 Oct 2020.



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# Prompting Readers to Plan Might Negatively Affect Their Comprehension of Multiple Documents

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## ABSTRACT

People need to critically comprehend information across multiple sources that express contradictory viewpoints to make decisions on relevant everyday-life issues and participate in the democratic discourse. However, the processing of multiple documents depends on readers' prior beliefs. The present study investigated the moderating effect of prompting planning on the link between prior beliefs and multiple-documents comprehension. Eighty university students participated in the study. First, their prior beliefs, prior knowledge, and topic interest were measured. Then, participants were randomly assigned to two conditions, one prompted, in which they were asked planning questions, and one non-prompted. Afterward, participants were assigned six documents presenting conflictual positions on flu vaccination, with the instruction of reading them, writing an argumentative essay, and making trustworthiness evaluations. According to the results, prompting students had a detrimental effect on argumentative essay performance, but not on trustworthiness judgments. This effect was stronger, the higher students' prior beliefs were and the lower their task-value motivation was.

## KEYWORDS

Argumentation; multiple-documents comprehension; planning; prior beliefs; reading motivation; topic interest; trustworthiness judgments

In the present day knowledge society, people have access to a great wealth of resources to solve information-based problems on health or other relevant aspects of life (Bråten, Britt, et al., 2011). To make decisions on relevant everyday-life issues and participate in the democratic discourse, people need to critically comprehend information across multiple sources that express diverse and contradictory viewpoints. In addition, college students are increasingly required to read multiple documents and synthesize information across multiple documents as part of their assignments (Linderholm, Kwon, et al., 2014).

In the last two decades, we witnessed an explosion of research on multiple-documents comprehension, as a consequence of the popularization of the World Wide Web and its increased integration into academic tasks to the K-12 classroom and beyond, including college (List & Alexander, 2017). Thus,

international scholars invested in the study of multiple-documents comprehension, leading to several articles and special issues on the topic (e.g., special issue on Models of Multiple Text Comprehension published in *Educational Psychologist* in 2017) and books and handbooks (such as the *Handbook of Multiple Source Use*, published in 2018).

To advance current research, in this study we focused on the relationship between prior beliefs and multiple-document comprehension. Prior beliefs are considered a fundamental variable in multiple-document comprehension (Richter & Maier, 2017; Tarchi, 2019), and attention to this component is warranted (Barzilai et al., 2015). Whether new information is consistent with prior beliefs or not has implications for the way it is processed. The dual-process theories posit the existence of two distinct forms of processing (Stanovich et al., 2016), one that is autonomous, passive, beyond the individual's control and operates independently of working memory (Type 1); and another one that is deliberate, effortful, conscious, and requires working memory (Type 2). Type 1 processes are generally enacted as they require less effort, but Type 2 processing should replace Type 1 when the task requires rational and effortful thinking. Prior beliefs are hypothesized to play a role in the selection of which type of processing is enacted. People generally process information that is not consistent with their own prior beliefs more deeply (Type 2 processing) to refute or undermine such information. Conversely, readers may process information that is consistent with their own prior beliefs more shallowly, by activating heuristics that require little cognitive effort (Andiliou et al., 2012; McCrudden & Barnes, 2016). Rational processing of controversial information seems possible only if readers are able to separate their prior beliefs from the reasoning, and process both belief-consistent and -inconsistent information with Type 2 processing.

It is important to design scaffolds to increase readers' awareness of their prior beliefs and prompt readers to plan their reading behavior in light of the reading goal. Thus, in this study, we explored the effect of prompting planning on the relationship between prior beliefs and multiple-document comprehension. Following, we present the theoretical framework of the present study: the Documents Model (Bråten, Britt, et al., 2011) and the two-step model of processing conflicting information in multiple documents (Richter & Maier, 2017). Then, we present past studies supporting the relevance of planning for multiple-documents comprehension.

### **Multiple-Documents Comprehension**

Multiple documents comprehension involves the “building of a coherent mental representation of an issue from the contents of multiple documents that deal with the same issue from different perspectives” (Bråten et al., 2013, pp. 322–23). The most prominent framework for analyzing this complex task

is the Documents Model (Bråten, Britt, et al., 2011). The Documents Model is an extension of Kintsch's (1998) construction-integration model of single-text comprehension. It assumes that four types of representation are required when comprehending multiple documents: a textbase model and a situation model for each text, plus an intertext model and an integrated (situations) model (Britt & Rouet, 2012). For the textbase model, readers need to represent the internal meaning of each text. For the situation model, readers need to link the textbase to relevant prior knowledge. For the intertext model, readers need to include a "node" for each text that incorporates relevant information about the source (Who wrote it and why, what type of text it is, what audience it was written for, when it was written, where it was published, and the like) and connect source nodes to the text content and to each other through supporting or opposing links. For the integrated mental model, readers need to create an internal representation that integrates content across documents, including agreements and discrepancies in the accounts they read.

Multiple-document comprehension involves several components (e.g., task interpretation; sourcing; analysis; integration; and communication, Rouet & Britt, 2011), but two of them have been identified as critical for a successful outcome: integration and sourcing (Barzilai et al., 2018; Bråten et al., 2009). Integration is at the core of multiple-documents comprehension as it involves the processing of information from diverse sources in order to achieve aims such as understanding the issue or drawing reasonable conclusions (Barzilai et al., 2018). The argumentative essay has been used as a measure of multiple-document comprehension in several studies (e.g., Barzilai et al., 2015) as it allows us to measure the level of integration of information from diverse sources. Sourcing is defined as the process of using information about documents (e.g., author, genre, and date of publication) to evaluate and interpret those documents' content (Brante & Strømsø, 2018; Wineburg, 1991).

The effortful processing of multiple documents depends on readers' prior beliefs. This variable plays an important role in influencing the use of Type 1 or Type 2 processing depending on whether documents are consistent or not with readers' prior beliefs. Past studies confirmed that prior beliefs moderates the effect of critical thinking on multiple-document comprehension (Tarchi & Mason, 2020) and contributes to influence readers' approach to the task (Tarchi, 2019). The next paragraph will present the relevant literature on the association between prior beliefs and multiple-documents comprehension.

### ***Readers' Prior Beliefs and Multiple-documents Comprehension***

In the literature on multiple-document comprehension, the most prominent model explaining the role of prior beliefs is the two-step model of processing conflicting information in multiple documents (Richter & Maier, 2017). The authors suggested that readers routinely monitor if incoming information is

consistent or not with their prior belief (validation). According to the model, in the first step of routine validation, readers detect text-belief inconsistencies and evaluate the validity of text content considering their prior beliefs. For validation processes to occur, conflicting information must be coactivated (Van den Broek & Kendeou, 2008). Validation processes are based on previous information read, prior knowledge, and prior beliefs: these processes need to be available and activated to influence reading. The validation step can induce the reader to reject belief-inconsistent information as it is considered as invalid unless the reader is highly motivated. In this case, in the second step, the reader engages in the strategic, resource-intensive elaboration of belief-inconsistent information, which leads to the construction of an integrated mental model of the controversial issue (Richter & Maier, 2017). Thus, the two-step model of processing conflicting information in multiple documents seems to suggest that validation processes are theoretically linked to three constructs, which have been found associated to multiple-document comprehension by past studies: prior knowledge (Bråten, Strømsø, et al., 2011; Strømsø et al., 2010), topic interest (Bråten et al., 2014), and motivation (Bråten et al., 2013). While the effect these variables on comprehension of single and multiple texts is well established, less is known about the effect of these variables on the association between prior beliefs and multiple-document comprehension, with a few exceptions.

In a set of experiments investigating the role of prior knowledge on the memory of controversial arguments in undergraduate students, Wiley (2005) found that the belief-consistency bias in the recall of arguments may be a function of prior knowledge, as the subjects with a higher knowledge did not show any bias, whereas subjects with a lower knowledge showed a significant bias. Topic interest too was found associated with multiple-document comprehension. Van Strien et al. (2016) investigated the role of belief strength, a composite score of interest, strength, and certainty. They found that university students with strong prior beliefs had higher performances when processing web pages that were consistent with their prior beliefs, whereas this effect was weaker in students with weak prior beliefs. Finally, the two-step validation model suggests that specific motivational states or goals can induce the reader to set an epistemic reading goal to process information from multiple sources (Richter, 2011). In a study by Maier and Richter (2014), university students were asked to read one belief-consistent and one belief-inconsistent text in two conditions, with either negative or positive performance feedback or no feedback on the implementation of three metacognitive strategies, to manipulate motivation. According to the results, the metacognitive strategies were effective in reducing a text-belief consistency effect only when students were motivated to use these strategies after positive performance feedback. Following the general expectancy-value model of academic motivation (Wigfield & Eccles, 2000), the value component of

motivation seems particularly important for readers to choose whether to engage with belief-inconsistent texts or not. Arguably, readers' beliefs about how useful a reading task is in relation to their goals, and how intrinsically interesting the task is to them play a role when readers identify a text as belief-inconsistent during the validation step. Anmarkrud and Bråten (2009) found that reading comprehension was predicted by task-value motivation, even after controlling for the effect of gender, prior knowledge, and strategic processing. Bråten et al. (2013) extended this research to multiple-document comprehension and found that task-value motivation did not contribute to multiple-document comprehension, as assessed by three open-ended questions, asking participants to integrate (the first question indirectly, but the other two questions directly) different viewpoints. As the authors argue, task-value might be more strongly related to choice ("should I read this text or not?") rather than to performance (Wigfield & Eccles, 2000); thus, results could change if readers are given the choice about reading order.

Certainly, text-belief consistency is influenced by task variables. Text-belief consistency effects are stronger when multiple-document comprehension is measured through an argumentative essay (Richter & Maier, 2017), as this task might strengthen reading goals directed at bolstering prior beliefs. Text presentation too was found to be a variable influencing the relationship between prior beliefs and multiple-document comprehension (Maier & Richter, 2013; Wiley, 2005). Maier and Richter (2013) found that interleaved presentation of texts was able to eliminate text-belief consistency effects, whereas block-by-block presentation of the same texts was not.

The literature on interventions aimed at supporting the readers to decouple prior beliefs from the processing of information from diverse sources is scarce. Several interventions that target integration (Barzilai et al., 2018) and sourcing (Brante & Strømsø, 2018) are available, but overall, classical cognitive and metacognitive strategies validated with comprehension of single texts do not seem sufficient to overcome the belief bias (Richter & Maier, 2017). Instead, previous studies have confirmed the efficacy of interventions aiming at enhancing metacognitive knowledge about the processing of conflicting information (Richter, 2015; Richter & Schmid, 2010). The next paragraph will present evidence supporting the hypothesis that planning may be a promising metacognitive strategy associated with better multiple-document comprehension performances.

### ***Effect of Planning on Multiple-document Comprehension***

Past studies have brought some evidence supporting the efficacy of explicit debiasing instructions (i.e., instructions to decouple prior beliefs from the evaluation of arguments) in increasing argumentative reasoning (Macpherson & Stanovich, 2007). Self-explanation too was linked to increased performances

in argumentative reasoning, as it fosters the use of available knowledge and skills (Roy & Chi, 2005), and it promotes the integration of new information with prior beliefs (Lombrozo, 2006). Results from past studies hint that awareness of sources might facilitate the planning of text reading (Strømsø et al., 2010) and that successful intertextual integration involves metacognitive planning (Barzilai et al., 2018). According to Linderholm, Kwon, et al., (2014), pre-reading instructions to self-explain were effective in enhancing college students' multiple-document comprehension performance. That instructions did not necessarily need to be modeled to be beneficial suggests that students could be induced to metacognitively reflect on their reading behavior, rather than explicitly instructed. Moreover, this set of results hints toward planning as a metacognitive strategy that, if prompted, might reduce the belief bias when reading controversial texts.

### ***The Present Study***

This contribution extends prior research on the relationship between readers' prior beliefs by investigating the moderating effect of instructions prompting planning. In the context of this study, by planning, we mean a critical reflection on the selection of readings, aimed at deciding what to read and what not to read, and which order to follow. Readers are cognitive misers<sup>1</sup> when processing text for comprehension and tend to economize their cognitive processing (Richter & Maier, 2017). The more time people read, the more likely they will concentrate their remaining resources on information considered plausible. If we include in the task prompts to induce readers to plan their reading behavior, they might proceed more rationally. Prompting planning might induce readers to process information regardless of their prior beliefs, distributing their resources equally to belief-consistent and belief-inconsistent texts. Past studies have shown that text presentation influences readers' comprehension processes (Maier & Richter, 2013; Wiley, 2005), and prompting planning might override the effect of this contextual variable. This effect might depend on the levels of prior knowledge, topic interest, and task-value motivation readers have toward the reading task and influence the planning behavior as cognitively and affectively engaged with the task. In this study, written argumentative essay and source trustworthiness judgment were used as reading outcomes.

## **Method**

### ***Participants***

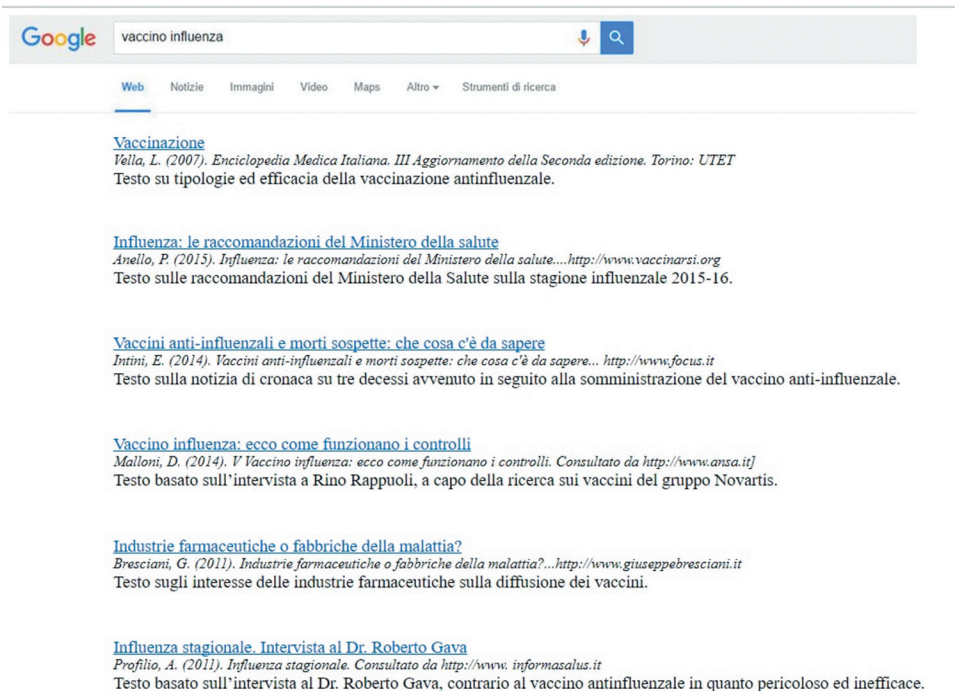
Eighty university students participated in the study (Age =  $21.69 \pm 5.00$ ; 73 females). Participants were students from a university located in central Italy.



They were enrolled in the second year of an Education program and voluntarily participated in the study. We obtained participants' informed and written consent to participate in the study. The ratio between males and females in this study is representative of the actual ratio of the population of students enrolled in Schools of Education in Italian universities. All participants were Italian and spoke Italian as their primary language. The sample was relatively homogeneous (i.e., middle class) regarding socioeconomic status, as assessed through parents' occupation. The study followed all the indications of the Declaration of Helsinki (World Medical Association, 2013) and was in line with the indications of the AIP (Associazione Italiana Psicologi, Italian Association of Psychologist) and University of Florence, Italy. Ethics approval was not required by the University of Florence at the time the research was conducted.

## Procedure

The procedure included three steps. First, students were administered the tests measuring prior beliefs and prior knowledge. Second, participants were randomly assigned to two conditions: one prompted and one non-prompted. Both groups were shown a Google-like page with six links, one for each document (see Figure 1), reporting information about the author and the source, plus a short



**Figure 1.** Google-like page with links to the documents.



description of the content. After reading the six documents, students were asked to write an argumentative essay and to judge the trustworthiness of each source.

In the prompted condition, participants were asked the following questions before they were assigned the texts to read:

- (1) *Which texts are you going to read?* Participants were asked to mark all the texts that they were going to read in order to complete the assigned task.
- (2) *Which order are you going to read the texts in?* Participants had to rank the order in which they were going to read the texts chosen in the first question.
- (3) *Describe your plan and the strategies you will use to read the texts and write the argumentative essay. Which texts are you going to read, in what order, what information are you looking for? Try to explain your reasons.* In this open-ended question, participants were asked to provide a rationale for the choices expressed in the first two questions.

In the non-prompted condition, the participants were asked some filler questions, not related to the topic.

Third, all students were asked to access the six assigned texts and to read them, with the following instructions: “A 55-year-old lady with prior cardiac problems, comes to you to ask for some advice. She is deciding whether she should get the flu vaccine or not. She looked for information on the Internet and found six documents. She would like you to read them and give her advice based on scientific facts.” Students could read the documents in any order they wanted, for how many times and how long as they wanted.

The six documents differed for position about the topic and trustworthiness, whereas length and difficulty<sup>2</sup> were similar (see [Table 1](#) for a description

**Table 1.** Characteristics of the six documents.

Document	Author	Text content	Main message	Words	Difficulty index
Encyclopedia	Professors	Encyclopedic information	Explains in a neutral academic way	441	37
Public information on the web	National Agency	Recommendation of the Health Ministry	Vaccine recommended for at-risk categories	573	35
Popular scientific magazine	Researcher	Flu vaccines and suspect deaths	Novartis vaccine thought to have caused deaths, but nothing was proven	508	48
Official news agency	Employee from the company producing vaccine (Novartis)	Describing flu vaccine and control	Novartis employee explains how strict controls on vaccines are	441	41
Personal blog	Blogger	Against pharmaceutical industry	Vaccines are useless	492	49
Newspaper article	Journalist	Interview to a doctor practicing alternative medicine	Vaccines are dangerous	488	34

of the documents). The topic of vaccination was chosen as it is a controversial topic at the center of public debate throughout the world and because it is a scientific topic. Past studies have demonstrated that even older students (e.g., college) struggle at integrating information from diverse sources when reading about science (Linderholm, Therriault, et al., 2014). Similar to prior studies, the research design recreated a scenario that resembled the situation in which individuals use the World Wide Web to research information about scientific issues, such as vaccination (Maier & Richter, 2013).

## **Measures**

### **Control Variables**

In step 1, students completed the following tests: prior knowledge, prior beliefs, topic interest, and task-value motivation.

**Prior Knowledge.** This construct was measured through a 5-item multiple-choice test. Students were asked questions about flu and vaccination (e.g., “Vaccines are available for these diseases, except for: A. Tetanus; B. Hepatitis A; C. Flu”). Scores could range between 0 and 5. The reliability of the instrument was  $\alpha = .76$ .

**Prior Beliefs.** The instrument was adapted from Maier and Richter (2013). Prior beliefs were measured through a 10-item questionnaire on a 6-point Likert scale on the topic of vaccination (e.g., I think vaccination is the most important and effective method against infective diseases). Scores could range from 10 to 60. The reliability of the instrument was  $\alpha = .82$ .

**Topic Interest.** This instrument was adapted from Boscolo and Mason (2003), and it measured topic interest through a 15-item questionnaire on a 5-point Likert scale on the topic of vaccination (e.g., I would like to know more about the pros and cons of vaccination). Scores could range from 15 to 75. The reliability of the instrument was  $\alpha = .70$ .

**Task-Value Motivation.** This instrument was derived from Anmarkrud and Bråten (2009) and Bråten et al. (2013), and it measured the value component of reading motivation through 10 items on a 10-point Likert scale (e.g., Even if it can be difficult to understand the content of the textbooks, I think it is important to understand it). Scores could range from 10 to 100. The reliability of the instrument was  $\alpha = .83$ .

### **Multiple-document Comprehension**

This construct was measured through an argumentative essay (Barzilai et al., 2015) and trustworthiness judgments (Bråten, Strømsø, et al., 2011).

**Quality of Argumentation.** The quality of students' argumentations was scored at five levels: 0. No argumentation provided; 1. Only one viewpoint is presented, without justification; 2. Only one viewpoint is presented and justified; 3. Both viewpoints are presented but no justification is provided; 4. Both viewpoints are presented but only one is justified; 5. Both viewpoints are presented and justified. Two independent raters, who had received specific training, coded all the material, achieving a good score of agreement ( $k = .91$ ). All cases of disagreement were scored by a third rater.

**Trustworthiness Judgment.** Students were asked to rate on a 10-point Likert scale how trustworthy each text was. Students were provided with information about each document (author, year, title, source, and a short paragraph to remind the participant about the content) and then asked to rate on a 10-point Likert scale how trustworthy each text was.

## Results

In the present study, we investigated the effect of prompting planning behavior on readers' multiple-documents comprehension. We expected that students in the prompted condition would outperform students in the non-prompted condition in the quality of argumentative essays and trustworthiness judgments. Descriptive results and correlation scores are reported in [Tables 2](#) and [3](#). Overall, students reported a medium-high level of pro-vaccination beliefs. 75% of the participants had a score of 40 or higher, which corresponds to "more agree than disagree" on the Likert scale. Thus, we could identify the sample as having high or moderate or low prior beliefs regarding vaccination, rather than split the sample into pro-vaccination versus against-vaccination. Students had a medium level of prior knowledge. Around half of the participants presented only one perspective in their essays, the other half discussed both perspectives in their essay, and around one-third of the participants introduced two perspectives fully justified in their essays. According to the descriptive statistics of trustworthiness judgments, the encyclopedia reading and the public report from the health ministry were considered the most trustworthy sources among all the readings, whereas the personal blog was considered as unreliable by most participants. The analysis of correlation scores emphasized the centrality of prior beliefs, as it was (negatively) associated with prior knowledge and the number of words in participants' essays. Moreover, prior beliefs were positively associated with the most trustworthy sources (i.e., encyclopedia reading and public report from the health ministry) and negatively associated with the two sources reporting a perspective against vaccination (i.e., the personal blog and the newspaper article reporting an interview to a doctor practicing alternative medicine).

**Table 2.** Descriptive results (minimum, maximum, mean, and standard deviation) for the total group (n = 80), and for each group, control (N = 41), and planning group (N = 39).

	Total				Control				Planning			
	Min	Max	M	SD	Min	Max	M	SD	Min	Max	M	SD
Prior beliefs	23	60	46.065	7.616	23	60	44.418	8.934	35	55	47.797	5.530
Prior knowledge	0	5	2.773	1.190	0	5	2.781	1.295	0	5	2.764	1.087
Interest	23	50	41.263	4.794	33	50	41.756	4.619	23	48	40.744	4.977
Motivation	29	88	67.013	11.245	29	84	67.268	11.502	45	88	66.744	11.111
Essay	1	5	3.43	1.403	1	5	3.71	1.470	2	5	3.13	1.281
Words	26	952	190.08	166.709	30	952	204.05	174.202	26	827	175.38	159.379
Trustworthiness_1	5	10	7.89	1.232	5	10	8.05	1.284	5	10	7.72	1.169
Trustworthiness_2	4	10	7.88	1.359	4	10	7.99	1.265	5	10	7.77	1.459
Trustworthiness_3	2	9	6.56	1.580	3	9	6.84	1.425	2	9	6.27	1.697
Trustworthiness_4	4	10	7.47	1.445	4	10	7.66	1.407	4	10	7.28	1.477
Trustworthiness_5	1	10	5.68	2.179	1	9	5.93	2.195	1	10	5.43	2.160
Trustworthiness_6	1	10	6.37	2.116	1	10	6.42	1.995	1	10	6.32	2.261

**Table 3.** Correlation scores among all variables included in the study (n = 80).

	1	2	3	4	5	6	7	8	9	10	11	12
1 Prior beliefs	1											
2 Prior knowledge	-.263*	1										
3 Interest	.023	.111	1									
4 Motivation	-.023	.024	-.057	1								
5 Essay	-.166	.015	-.124	.107	1							
6 Words	-.225*	.050	-.059	.196	.187	1						
7 Trustworthiness_1	.237*	-.076	.136	-.020	.145	-.105	1					
8 Trustworthiness_2	.250*	-.148	.170	.172	-.061	.054	.274*	1				
9 Trustworthiness_3	.136	-.040	-.140	-.024	.043	.055	.084	.114	1			
10 Trustworthiness_4	.245*	-.197	.073	.043	.143	.115	.418**	.488**	.239*	1		
11 Trustworthiness_5	-.234*	.134	-.093	-.206	.176	-.037	-.158	-.157	.373**	.110	1	
12 Trustworthiness_6	-.317**	.081	-.112	.039	-.004	.145	-.047	.031	.082	.253*	.512**	1

Note. \*\* p < .01. \*p < .05

The analysis of pretest scores did not reveal any significant differences between groups in prior beliefs, prior knowledge, topic interest, or reading motivation (see Table 4).

To test the research hypothesis, a Mann-Whitney test was conducted, as the dependent variable (i.e., argumentative essay) was categorical. Group was the independent variable. According to the results, the control group (Rank mean = 45.30) outperformed the planning group (Rank mean = 34.45), Mann-Whitney's  $U = 602.500$ ,  $z = -2.050$ ,  $p = .040$ . To investigate group differences in trustworthiness judgments, a series of t-tests for independent samples were conducted, but no significant differences were found for any of the documents (see Table 5).

This set of results was surprising. Prompting planning in university students was detrimental to their ability to write an argumentative essay after reading

**Table 4.** Pre-test differences between groups: t-student tests for independent samples (n = 80).

	t	df	p	95% LCI	95% UCI
Prior beliefs	-.733	78	.466	-4.821	2.226
Prior knowledge	-.060	78	.952	-.550	.517
Interest	-.944	78	.348	-3.149	1.123
Motivation	-.207	78	.836	-5.562	4.513

**Table 5.** Post-test differences in trustworthiness judgments between groups: t-student tests for independent samples (n = 80).

	t	df	p	95% LCI	95% UCI
Trustworthiness_1	-1.204	78	.232	-.878	.216
Trustworthiness_2	-.738	78	.463	-.832	.382
Trustworthiness_3	-1.636	78	.106	-1.268	.124
Trustworthiness_4	-1.176	78	.243	-1.021	.263
Trustworthiness_5	-1.024	78	.309	-1.469	.471
Trustworthiness_6	-.210	78	.834	-1.048	.848

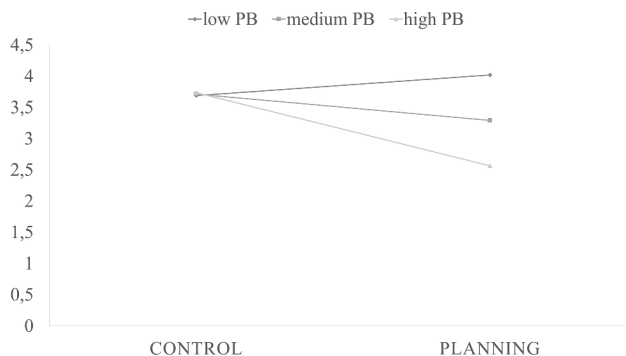
six documents offering different perspectives on a controversial topic, and it did not influence trustworthiness judgments. To better explain this result a moderation analysis was conducted, using the MPlus 7.0 software (Muthen & Muthen, 2002), to control whether group moderated the influence of control variables (prior knowledge, prior beliefs, topic interest, task-value motivation, and the number of words in the essays) on argumentative essays.

As suggested by Hu and Bentler (1999), the fit of the model was estimated with several indices: the chi-square, which should be non-significant; the root mean square error of approximation (RMSEA), which should be less than .05; and the comparative fit index (CFI), which should be greater than .95. Missing data ranged between 1% and 5% and were missing completely at random (Little's MCAR test was not significant,  $\chi^2 = 146.97$ ,  $df = 1160$ ,  $p = .087$ ). The hypothesized model fit the data well,  $\chi^2 (12) = 13.096$ ,  $p = .362$ ; RMSEA = .048; CFI = .957. None of the estimated paths was significant for the control group. In the planning group, prior beliefs and task-value motivation contributed to performance in the argumentative essays (see Table 6).

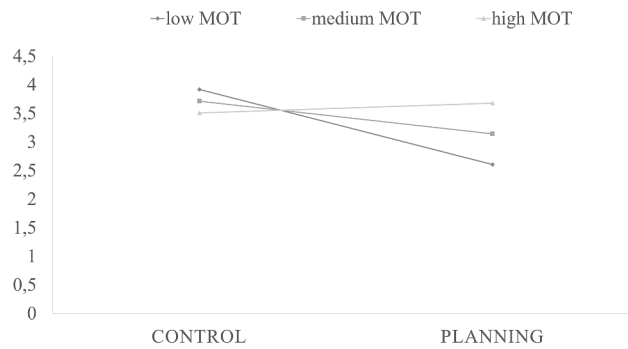
**Table 6.** Estimates of the path analysis for the two groups.

	Control					Planning				
	Estimate	S.E.	p	95% CI		Estimate	S.E.	p	95% CI	
Prior beliefs	0.076	0.197	0.698	-0.247	0.400	0.122	0.158	0.438	-0.137	0.381
Prior knowledge	0.004	0.029	0.887	-0.043	0.052	-0.090	0.034	0.008	-0.146	-0.034
Interest	-0.089	0.049	0.070	-0.169	-0.008	0.044	0.037	0.238	-0.017	0.104
Motivation	-0.017	0.019	0.378	-0.049	0.015	0.035	0.017	0.044	0.006	0.064
Words	0.000	0.001	0.941	-0.002	0.002	0.001	0.001	0.437	-0.001	0.003

Specifically, in the planning group, participants with high prior beliefs performed worse in the argumentative essay than participants with medium and low prior beliefs did (see Figure 2). Conversely, in the planning group, participants with low motivation performed worse in the argumentative essay than participants with medium and high motivation did (see Figure 3).



**Figure 2.** Graphical representation of the moderating effect of group on the association between prior beliefs and argumentative essay scores.



**Figure 3.** Graphical representation of the moderating effect of group on the association between motivation and argumentative essay scores.

## Discussion

In this study, we expected that prompting planning behavior before reading multiple documents on a controversial topic could have a positive effect on people's construction of an integrated mental representation. Data showed a different pattern, as the control group outperformed the planning group in the argumentative essay performance, and no differences were found for trustworthiness judgments. Although few studies seemed to suggest that prompting planning behavior might be sufficient to promote the integration of conflictual sources (e.g., studies on self-explanation effects, Lombrozo, 2006; Roy & Chi, 2005), most of the studies that proved to be statistically effective included explicit instructions (Braasch et al., 2013; Britt & Aglinskas, 2002; Macpherson & Stanovich, 2007) and feedback from the teacher (Maier & Richter, 2014). Thus, if on the one hand, past studies have confirmed that it is possible to promote an integrated situation model of multiple documents by presenting belief-consistent and belief-inconsistent texts in an alternating sequence (Maier & Richter, 2013; Richter & Maier, 2017; Wiley, 2005), the present study found that university students are not able to do this on their own, confirming the general assumption that this population does not possess the necessary skills and dispositions to effectively process of multiple documents (Bråten, Britt, et al., 2011).

Studies on multiple-documents comprehension vary in the way they expose students to texts, whether they provide them with two, four, six or more texts, or whether they let participants choose the order in which different texts are studied or not, but in real life, readers have to plan their behavior. Thus, it is important to continue studying the potential mechanisms underlying a moderating effect of text sequence (Richter & Maier, 2017). There are several reasons why the planning prompt was not effective in this study, and the inclusion of prior knowledge, topic interest, and task-value motivation allowed us to explore them. Firstly, the results might have depended on the



levels of prior knowledge. For validation processes to occur, conflicting information must be coactivated (Van den Broek & Kendeou, 2008). Prompting planning cannot be effective unless appropriate prior knowledge is available. Past research showed that high-knowledge readers are able to decouple prior beliefs from information accessed in sources, whereas low-knowledge readers are influenced by the text-belief consistency effect (Wiley, 2005). The interleaved presentation of texts reduces such text-belief consistency effect (Maier & Richter, 2013; Wiley, 2005), but only if externally manipulated, as the readers do not seem aware of the importance of deciding in which order they should read the texts. Interestingly, the detrimental effect of prompting planning was significant for the argumentative essay performance and not for trustworthiness judgments, suggesting the existence of an interaction between intervention and task. Indeed, the argumentative task might establish a belief-consistency effect by strengthening reading goals directed at bolstering prior beliefs (Richter & Maier, 2017), and prompting planning might have increased the effect size of this association.

The moderation analysis suggested that prompting planning is detrimental when prior beliefs are highly skewed toward vaccination, which suggests that planning is used by readers as a validation strategy to reduce the level of cognitive effort required to complete the task. As a matter of fact, prompting planning did not influence trustworthiness judgments, a cognitively less demanding task than argumentative essay writing. Conversely, task-value motivation seemed to reduce the detrimental effect of planning, as readers with high task-value motivation obtained similar scores in the argumentative essay task than control group readers did. This result confirms that individuals are motivated to engage in effortful processing of text-belief consistent and inconsistent information if they believe that the task is useful to their goals (Richter & Maier, 2017; Wigfield & Eccles, 2000). Past studies on multiple-document comprehension did not find an effect of task-value motivation (Bråten et al., 2013), but as the authors themselves argued, this result might have been influenced by the research design, as task-value might be more strongly related to choice (e.g., choosing whether to read a specific document or not).

### **Limitations**

When interpreting the findings of the current study, some limitations should be taken into account. Firstly, in this study, students reported medium-high levels of pro-vaccination beliefs and medium levels of prior knowledge. Results might differ with other types of students with higher levels of knowledge or with strong beliefs against vaccination. Secondly, the results of this study are limited to the population involved, that is, mostly female Italian undergraduate students. In this regard, it should be pointed out, however, that prior

research has not revealed gender differences for deeper-level processing and multiple-document comprehension (Strømsø et al., 2010). Thirdly, the findings of the present study are only interpretable with reference to the specific topic (flu vaccination) analyzed. The use of other topics, for instance, issues participants are more familiar with, might reveal a different interplay of the examined variables.

### ***Theoretical and Practical Significance***

Despite the limitations, the present study contributes to the literature on multiple-document comprehension by investigating the text-belief consistency effect in several ways. On a theoretical level, this study suggests that university students' difficulty in constructing an integrated mental model when reading multiple documents might also depend on an inability to effectively plan their reading behavior to decouple prior beliefs from the validation of sources and evaluation of arguments. According to several studies the readers' prior beliefs guide their reading processes when engaged with multiple documents (Richter & Maier, 2017). If, on the one hand, the influence of prior beliefs on multiple-document comprehension is well-grounded in evidence, on the other hand, less advanced is our understanding of how we can help readers to decouple their prior beliefs and open their mind toward alternative perspectives. Consequently, the problem may not be that students do not know how to activate strategic processing, but they may use strategic processing for the wrong function. Past studies have shown that readers may approach multiple documents with the purpose of accumulating facts, which leads to one-sided reasoning, or with the purpose of cross-text elaboration (see Bråten & Strømsø, 2011).

Moreover, this study suggests that task-value motivation supports readers' construction of an integrated mental model when they are given the choice of reading the documents or not, and in which order. Instead, prior knowledge and topic interest do not seem to play a role in reducing the detrimental effect of prompting planning. The result is consistent and extends prior studies: In line with the two-step validation model (Richter & Maier, 2017), prior beliefs appear to play a much stronger role than prior knowledge; however, this result may depend on the topic chosen. When reflecting on a scientific topic (i.e., vaccination), readers may have an opinion (i.e., belief) but not necessarily a strong base of knowledge. However, if readers are motivated, they are willing to put effort and take into consideration and process belief-inconsistent information too. The results of the present study suggest that it is task-value motivation (and not topic interest) in specific that can induce a more rational and metacognitive reading behavior, which leads to a two-sided representation of the controversial topic.

On a practical level, the result of the present study offers the following suggestions for college reading and learning processes. First, the performances in the argumentative essay were extremely low, with most students approaching the controversy discussed in the reading through one-sided reasoning. As most college assignments are based on reading multiple sources and synthesizing ideas across these sources, it is fundamental to introduce evidence-based interventions to support multiple-documents comprehension as part of college education. The scientific literature suggests that two important skills should be developed: sourcing and integration. Sourcing is defined as the process of using information about documents (e.g., the author, genre, and date of publication) while evaluating and interpreting the documents' content, and can be promoted by exposing students to multiple documents, introducing simple scaffolds (e.g., information and worksheets) (Brante & Strømsø, 2018). Integration is the core element when writing from contradictory texts and implies going beyond the perspectives presented in the texts and elaborating a coherent approach (Barzilai & Weinstock, 2015). It can be improved by teaching and scaffolding integration strategies, helping students appreciate the value and the importance of integration through discussions and modeling, addressing students' understandings of text structures, and fostering students' revision ability (Barzilai et al., 2018). College teachers may want to include discipline-specific scaffolds to sourcing and integration skills as part of the assignments that involve multiple documents.

Second, academic assignments based on multiple sources should integrate scaffolds to enhance task-value motivation. This result directs our attention to the set of goals and plans that drives the readers' decisions and actions in reading (Rouet et al., 2017). Task-value motivation has been found as an important predictor of reading comprehension (Anmarkrud & Bråten, 2009). Some authors have observed a general decline in academic motivation (Schunk et al., 2008), calling for more attention to this aspect of learning. In specific, teachers may dedicate some time in explaining students the value of reading multiple documents, focusing on belief-inconsistent texts too. Academic motivation seems to interact with the instructions given. Asking students to plan seems to be detrimental specifically for low-motivation students, whereas in the control condition performances were equivalent across levels of motivation. College teachers should carefully reflect on what dispositions could a task instruction promote and design instructions in a way that fosters task-value motivation.

## **Conclusion**

The present study contributes to our general understanding of students' digital literacy. Past studies have shown that college students' digital literacy competencies do not automatically transfer to academic tasks, so

teachers should create opportunities building on students' digital literacies when focusing on the fundamentals of critical reading (Caverly et al., 2019). For instance, in a qualitative study implementing peer discussion of intertextual reading assignments has been found to enhanced reflexive student reading practices (Brathwaite, 2019). Moreover, in a short piece Polk (2019) discussed a few instructional strategies or activities that can be embedded in the curriculum to help students dealing with fake news and alternative facts, something that can be considered as a sub-category of multiple-documents comprehension.

In specific, the present study focused on the interaction between readers' individual differences and task characteristics. The results provide a context for a reflection on the side effects of framing tasks based on multiple sources in a way that activates prior beliefs but not strategic processing. Future studies should further investigate students' behavior when working on multiple documents. For instance, past studies have shown that the majority of college students engage in one or more further activities while reading for academic purposes (e.g., watching TV or surfing on the Internet), which, admittedly, influences their ability to focus on the academic task (Mokhtari et al., 2015). Interestingly, faculty may already work toward helping students improve their multiple-reading competencies, but their actions may not be valued by students. Indeed, although faculty and students both agree that college should make students proficient readers, reading ability is not explicitly addressed in college; students believe that they can learn what they need to learn without completing their reading assignments, and overrate their reading abilities (Howard et al., 2018). To conclude, the present study aligns with Stahl and Armstrong's claim that college reading should be re-claimed, re-invented, and re-formed (Stahl & Armstrong, 2018). Reading literacy should be defined in a way to include also multiple-documents comprehension skills and academic tasks should be revised in order to facilitate a critical, metacognitive, and motivated approach.

## Notes

1. The term was originally introduced by Fiske and Taylor (1984) as a metaphor of mind based on the recognition that humans are rarely motivated to engage in effortful and rational mental activity. According to this metaphor, the human mind is limited in time, knowledge, attention, and cognitive resources.
2. The text difficulty was calculated through the Gulpease index (Lucisano & Piemontese, 1988):  $89 - (\text{letters} * 100 / \text{total number of words}) / 10 + (\text{sentences} * 100 / \text{total number of words}) * 3$ .

## Disclosure Statement

No potential conflict of interest was reported by the author.

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## References

- Andiliou, A., Ramsay, C. M., Murphy, P. K., & Fast, J. (2012). Weighing opposing positions: Examining the effects of intratextual persuasive messages on students' knowledge and beliefs. *Contemporary Educational Psychology*, 37(2), 113–127. <https://doi.org/10.1016/J.CEDPSYCH.2011.10.001>
- Anmarkrud, Ø., & Bråten, I. (2009). Motivation for reading comprehension. *Learning and Individual Differences*, 19(2), 252–256. <https://doi.org/10.1016/j.lindif.2008.09.002>
- Barzilai, S., Tzadok, E., & Eshet-Alkalai, Y. (2015). Sourcing while reading divergent expert accounts: Pathways from views of knowing to written argumentation. *Instructional Science*, 43, 737–766. <https://doi.org/10.1007/s11251-015-9359-4>
- Barzilai, S., & Weinstock, M. (2015). Measuring epistemic thinking within and across topics: A scenario-based approach. *Contemporary Educational Psychology*, 42(3), 141–158. <https://doi.org/10.1016/j.cedpsych.2015.06.006>
- Barzilai, S., Zohar, A. R., & Mor-Hagani, S. (2018). Promoting integration of multiple texts: A review of instructional approaches and practices. *Educational Psychology Review*, 30(3), 973–999. <https://doi.org/10.1007/s10648-018-9436-8>
- Boscolo, P., & Mason, L. (2003). Topic knowledge, text coherence, and interest: How they interact in learning from instructional texts. *The Journal of Experimental Education*, 71(2), 126–148. <https://doi.org/10.1080/00220970309602060>
- Braasch, J. L. G., Bråten, I., Strømsø, H. I., Anmarkrud, Ø., & Ferguson, L. E. (2013). Promoting secondary school students' evaluation of source features of multiple documents. *Contemporary Educational Psychology*, 38(3), 180–195. <https://doi.org/10.1016/j.cedpsych.2013.03.003>
- Brante, E. W., & Strømsø, H. I. (2018). Sourcing in text comprehension: A review of interventions targeting sourcing skills. *Educational Psychology Review*, 30(3), 773–799. <https://doi.org/10.1007/s10648-017-9421-7>
- Bråten, I., Britt, M. A., Strømsø, H. I., & Rouet, J.-F. (2011). The role of epistemic beliefs in the comprehension of multiple expository texts: Toward an integrated model. *Educational Psychologist*, 46(1), 48–70. <https://doi.org/10.1080/00461520.2011.538647>
- Bråten, I., Ferguson, L. E., Anmarkrud, Ø., & Strømsø, H. I. (2013). Prediction of learning and comprehension when adolescents read multiple texts: The roles of word-level processing, strategic approach, and reading motivation. *Reading and Writing*, 26(3), 321–348. <https://doi.org/10.1007/s11145-012-9371-x>
- Bråten, I., Ferguson, L. E., Strømsø, H. I., & Anmarkrud, Ø. (2014). Students working with multiple conflicting documents on a scientific issue: Relations between epistemic cognition while reading and sourcing and argumentation in essays. *British Journal of Educational Psychology*, 84(1), 58–85. <https://doi.org/10.1111/bjep.12005>
- Bråten, I., & Strømsø, H. I. (2011). Measuring strategic processing when students read multiple texts. *Metacognition and Learning*, 6(2), 111–130. <https://doi.org/10.1007/s11409-011-9075-7>

- Bråten, I., Strømsø, H. I., & Britt, M. A. (2009). Trust matters: Examining the role of source evaluation in students' construction of meaning within and across multiple texts. *Reading Research Quarterly*, 44(1), 6–28. <https://doi.org/10.1598/RRQ.44.1.1>
- Bråten, I., Strømsø, H. I., & Salmerón, L. (2011). Trust and mistrust when students read multiple information sources about climate change. *Learning and Instruction*, 21(2), 180–192. <https://doi.org/10.1016/j.learninstruc.2010.02.002>
- Brathwaite, N. H. (2019). I just couldn't get into it: Promoting reflexive reading practices in the writing classroom using intertextuality. *Journal of College Reading and Learning*, 49(3), 223–243. <https://doi.org/10.1080/10790195.2019.1599746>
- Britt, M. A., & Aglinskias, C. (2002). Improving students' ability to identify and use source information. *Cognition and Instruction*, 20(4), 485–522. [https://doi.org/10.1207/S1532690XCI2004\\_2](https://doi.org/10.1207/S1532690XCI2004_2)
- Britt, M. A., & Rouet, J.-F. (2012). Learning with multiple documents: Component skills and their acquisition. In J. R. Kirby & M. J. Lawson (Eds.), *Enhancing the quality of learning: Dispositions instruction, and learning processes* (pp. 276–314). Cambridge University Press.
- Caverly, D. C., Payne, E. M., Castillo, A. M., Sarker, A., Threadgill, E., & West, D. (2019). Identifying digital literacies to build academic literacies. *Journal of College Reading and Learning*, 49(3), 170–205. <https://doi.org/10.1080/10790195.2019.1638218>
- Fiske, S. T., & Taylor, S. E. (1984). *Social cognition* ((1st ed.). Addison-Wesley.
- Howard, P. J., Gorzycki, M., Desa, G., & Allen, D. D. (2018). Academic reading: Comparing students' and faculty perceptions of its value, practice, and pedagogy. *Journal of College Reading and Learning*, 48(3), 189–209. <https://doi.org/10.1080/10790195.2018.1472942>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kintsch, W. (1998). *Comprehension: A paradigm for cognition*. Cambridge University Press.
- Linderholm, T., Kwon, H., & Theriault, D. J. (2014). Instructions that enhance multiple-text comprehension for college readers. *Journal of College Reading and Learning*, 45(1), 3–19. <https://doi.org/10.1080/10790195.2014.906269>
- Linderholm, T., Theriault, D. J., & Kwon, H. (2014). Multiple science text processing: building comprehension skills for college student readers. *Reading Psychology*, 35(4), 332–356. <https://doi.org/10.1080/02702711.2012.726696>
- List, A., & Alexander, P. A. (2017). Analyzing and integrating models of multiple text comprehension. *Educational Psychologist*, 52(3), 143–147. <https://doi.org/10.1080/00461520.2017.1328309>
- Lombrozo, T. (2006). The structure and function of explanations. *Trends in Cognitive Sciences*, 10(10), 464–470. <https://doi.org/10.1016/J.TICS.2006.08.004>
- Lucisano, P., & Piemontese, M. E. (1988). GULPEASE: Una formula per la predizione della difficoltà dei testi in lingua italiana (en. tr. GULPEASE: A formula to predict the difficulty of texts in Italian). *Scuola e Città*, 3, 110–124.
- Macpherson, R., & Stanovich, K. E. (2007). Cognitive ability, thinking dispositions, and instructional set as predictors of critical thinking. *Learning and Individual Differences*, 17(2), 115–127. <https://doi.org/10.1016/j.lindif.2007.05.003>
- Maier, J., & Richter, T. (2013). Text belief consistency effects in the comprehension of multiple texts with conflicting information. *Cognition and Instruction*, 31(2), 151–175. <https://doi.org/10.1080/07370008.2013.769997>
- Maier, J., & Richter, T. (2014). Fostering multiple text comprehension: How metacognitive strategies and motivation moderate the text-belief consistency effect. *Metacognition and Learning*, 9(1), 51–74. <https://doi.org/10.1007/s11409-013-9111-x>



- McCrudden, M. T., & Barnes, A. (2016). Differences in student reasoning about belief-relevant arguments: A mixed methods study. *Metacognition and Learning*, 11(3), 275–303. <https://doi.org/10.1007/s11409-015-9148-0>
- Mokhtari, K., Delello, J., & Reichard, C. (2015). Connected yet distracted: Multitasking among college students. *Journal of College Reading and Learning*, 45(2), 164–180. <https://doi.org/10.1080/10790195.2015.1021880>
- Muthen, B., & Muthen, L. (2002). *MPlus: The comprehensive modeling program for applied researchers*. Muthen & Muthen.
- Polk, R. L. (2019). L'esprit critique in the era of fake news and alternative facts. *Journal of College Reading and Learning*, 49(3), 260–265. Taylor and Francis Inc. <https://doi.org/10.1080/10790195.2019.1597658>
- Richter, T. (2011). Cognitive flexibility and epistemic validation in learning from multiple texts. In J. Elen, E. Stahl, R. Bromme, & G. Clarebout (Eds.), *Links between beliefs and cognitive flexibility* (pp. 125–140). Springer. [https://doi.org/10.1007/978-94-007-1793-0\\_7](https://doi.org/10.1007/978-94-007-1793-0_7)
- Richter, T. (2015). Validation and comprehension of text information: Two sides of the same coin. *Discourse Processes*, 52(5–6), 337–355. <https://doi.org/10.1080/0163853X.2015.1025665>
- Richter, T., & Maier, J. (2017). Comprehension of multiple documents with conflicting information: A two-step model of validation. *Educational Psychologist*, 52(3), 1–19. <https://doi.org/10.1080/00461520.2017.1322968>
- Richter, T., & Schmid, S. (2010). Epistemological beliefs and epistemic strategies in self-regulated learning. *Metacognition and Learning*, 5(1), 47–65. <https://doi.org/10.1007/s11409-009-9038-4>
- Rouet, J.-F., & Britt, M. A. (2011). Relevance processes in multiple document comprehension. In M. T. McCrudden, J. P. Magliano, & G. Schraw (Eds.), *Text relevance and learning from text* (pp. 19–52). Information Age Publishing.
- Rouet, J.-F., Britt, M. A., & Durik, A. M. (2017). RESOLV: Readers' representation of reading contexts and tasks. *Educational Psychologist*, 52(3), 200–215. <https://doi.org/10.1080/00461520.2017.1329015>
- Roy, M., & Chi, M. T. H. (2005). The self-explanation principle in multimedia learning. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (pp. 171–286). Cambridge University Press.
- Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). *Motivation in education: Theory, research, and application* (3rd ed.). Merrill Prentice Hall.
- Stahl, N. A., & Armstrong, S. L. (2018). Re-claiming, re-inventing, and re-reforming a field: The future of college reading. *Journal of College Reading and Learning*, 48(1), 47–66. <https://doi.org/10.1080/10790195.2017.1362969>
- Stanovich, K. E., West, R. F., & Toplak, M. E. (2016). *The rationality quotient: Toward a test of rational thinking*. The MIT Press.
- Strømso, H. I., Bråten, I., & Britt, M. A. (2010). Reading multiple texts about climate change: The relationship between memory for sources and text comprehension. *Learning and Instruction*, 20(3), 192–204. <https://doi.org/10.1016/j.learninstruc.2009.02.001>
- Tarchi, C. (2019). Identifying fake news through trustworthiness judgements of documents / La identificación de noticias falsas mediante juicios de fiabilidad de los documentos. *Cultura Y Educación*, 31(2), 369–406. <https://doi.org/10.1080/11356405.2019.1597442>
- Tarchi, C., & Mason, L. (2020). Effects of critical thinking on multiple-document comprehension. *European Journal of Psychology of Education*, 35(2), 289–313. <https://doi.org/10.1007/s10212-019-00426-8>



- Van den Broek, P., & Kendeou, P. (2008). Cognitive processes in comprehension of science texts: The role of co-activation in confronting misconceptions. *Applied Cognitive Psychology*, 22(3), 335–351. <https://doi.org/10.1002/acp.1418>
- Van Strien, J. L. H., Kammerer, Y., Brand-Gruwel, S., & Boshuizen, H. P. A. (2016). How attitude strength biases information processing and evaluation on the web. *Computers in Human Behavior*, 60, 245–252. <https://doi.org/10.1016/J.CHB.2016.02.057>
- Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 68–81. <https://doi.org/10.1006/ceps.1999.1015>
- Wiley, J. (2005). A fair and balanced look at the news: What affects memory for controversial arguments? *Journal of Memory and Language*, 53(1), 95–109. <https://doi.org/10.1016/j.jml.2005.02.001>
- Wineburg, S. (1991). Historical problem solving: A study of the cognitive processes used in the evaluation of documentary and pictorial evidence. *Journal of Educational Psychology*, 83(1), 73–87. <https://doi.org/10.1037/0022-0663.83.1.73>
- World Medical Association. (2013). Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191–2194. <https://doi.org/10.1001/jama.2013.281053>