Exploring the effect of task instructions on topic beliefs and topic belief justifications: A mixed methods study

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A B S T R A C T

The purpose of this mixed methods study was to investigate whether task instructions that asked adolescents to evaluate the merit of both sides of a controversial issue would affect their topic beliefs and topic belief justifications after they read belief-consistent and belief-inconsistent information. In the quantitative phase, we conducted an experiment in which high school students ($n = 45$) were randomly assigned to one of four conditions and received their respective pre-reading task instructions. Quantitative analyses showed that task instructions affected topic beliefs and belief justifications. However, inspection of topic belief scores within each condition indicated that some individuals' beliefs became weaker, whereas others' became stronger. In the qualitative phase, we conducted interviews to explain why this occurred. The interview data revealed two distinct reader profiles: belief-reflection and belief-protection. The data sets were complementary: the *quan*titative data indicated group differences in topic beliefs and belief justifications, and the *quali*tative data allowed us to explain differences within and across groups.

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1. Introduction

Why do individuals who read the same arguments react differently? To some extent, their reactions may depend on their beliefs. In the present study, the term *belief* will refer to an idea that an individual wants to be true but does not require verification (e.g., opinions; Murphy & Mason, 2006). For instance, in a seminal study, Lord, Ross, and Lepper (1979) identified undergraduates who either did or did not believe in the deterrent effect of capital punishment and asked them to read two studies: one provided evidence that supported the deterrent effect of capital punishment and the other provided evidence that opposed its deterrent effect. After reading each text, participants evaluated the convincingness of the evidence and judged how well or poorly the study had been conducted. Participants rated the belief-consistent study to be more convincing and better conducted. Subsequent research on multiple topics has shown that people tend to evaluate information in a way that preserves their existing beliefs (Bastardi, Uhlmann, & Ross, 2011; Clark, Wegener, Habashi, & Evans, 2012; Edwards & Smith, 1996; Kardash & Howell, 2000; Kunda, 1990; McHoskey, 1995; Nickerson, 1998; Plous, 1991; Taber & Lodge, 2006).

It is inevitable and often defensible for individuals' beliefs to influence their reactions to belief-consistent and belief-inconsistent information (Moshman, 2011). However, belief-motivated reasoning (failure to reason independently from one's beliefs) can lead to "case building", or the justification of a pre-drawn conclusion, as opposed to the impartial evaluation of evidence to arrive at an unbiased conclusion (Nickerson, 1998). Case building occurs when a person selectively gathers, or gives unjust weight to, belief-consistent information while simultaneously neglecting or discounting belief-inconsistent information (Nickerson, 1998). This is problematic because individuals' criterion for acceptance/rejection of information is primarily based on belief-consistency, with minimal regard for informational quality; such as when individuals uncritically accept belief-consistent information, yet readily dismiss or discredit belief-inconsistent information.

Given the pervasiveness of belief-motivated reasoning (Bastardi et al., 2011; Clark et al., 2012; Edwards & Smith, 1996; Kardash & Howell, 2000; Kunda, 1990; McHoskey, 1995; Nickerson, 1998; Plous, 1991; Taber & Lodge, 2006), more research is needed to identify ways to minimize its impact. The purpose of the present study was to investigate whether task instructions encourage adolescents to consider the merit of belief-*inconsistent* information. We identified high school students who held a particular topic belief and gave them different pre-reading task instructions that were designed to encourage them to focus on the merit of both sides of an issue to a greater or lesser extent while they read.

To understand the underlying mechanisms of belief-motivated reasoning, Edwards and Smith (1996) proposed the disconfirmation model to explain why individuals process belief-consistent

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and belief-inconsistent information differently. According to this model, beliefs affect the extent to which individuals scrutinize an argument and the strategies they use to do so. When individuals read belief-inconsistent arguments, they scrutinize the argument to a greater extent and attempt to refute, undermine, or disconfirm it. Conversely, when individuals read belief-consistent arguments, they scrutinize the argument to a lesser extent, and they are more likely to accept it at face value.

To test this model, Edwards and Smith identified proponents and opponents of various issues (e.g., death penalty) and had them read belief-consistent and belief-inconsistent arguments (e.g., death penalty should/should not be abolished) as reading time was recorded. After they read each argument, they listed any thoughts that came to mind. Participants spent more time reading belief-inconsistent arguments. Further, they listed a greater number of refutational thoughts after they read belief-inconsistent arguments, whereas they listed a greater number of supportive thoughts after they read belief-consistent arguments. They found this pattern for individuals with extreme and moderate views. Overall, these data indicate that participants spent more time evaluating belief-inconsistent information and sought to refute or disconfirm the information. Other research has shown similar findings (e.g., Ditto & Lopez, 1992; Klaczynski, 2000; Taber et al., 2009).

One possible way to minimize belief-motivated reasoning is to give students pre-reading task instructions that encourage them to consider the merit of both sides of an issue. Pre-reading task instructions are externally-provided (e.g., teacher) prompts that help orient individuals towards a reading task (McCrudden, Magliano, & Schraw, 2010; Rouet & Britt, 2011; Van den Broek & Espin, 2012). Task instructions have three main, interrelated functions. First, they signal *why* students should read, or the purpose for reading (Alexander & Jetton, 1996; Jetton & Alexander, 1997; Ramsey & Sperling, 2011). Examples include reading to prepare for an exam, write an essay, or prepare for a discussion. Second, task instructions signal *how* students should read, or the types of strategies that will be useful for fulfilling the reading purpose (Cerdán & Vidal-Abarca, 2008; Gil, Bråten, Vidal-Abarca, & Strømsø, 2010; Linderholm, Kwon, & Wang, 2011; Linderholm & van den Broek, 2002; Lorch, Lorch, & Klusewitz, 1993; Magliano, Trabasso, & Graesser, 1999; Navarez, van den Broek, & Ruiz, 1999; van den Broek, Lorch, Linderholm, & Gustafson, 2001). For example, van den Broek et al. (2001) found that when participants read for a study purpose (e.g., to take a test), they made more explanatory inferences, predictive inferences, paraphrases, and repeated information more frequently than when they read for entertainment. Thus, task instructions affect the types of strategies readers use. Third, task instructions signal *what* students should read. Task instructions affect text relevance, the perceived instrumental value of text information in relation to a reading goal (Lehman & Schraw, 2002; McCrudden, Magliano, & Schraw, 2011). Readers generally direct more attention towards task-relevant information than task-irrelevant information (Kaakinen & Hyönä, 2011; McCrudden & Schraw, 2007). In sum, task instructions signal why, how, and what to read.

Previous research has shown that task instructions can mitigate belief-motivated reasoning when individuals evaluate research scenarios (Beatty & Thompson, 2012; Greenhoot, Semb, Colombo, & Schreiber, 2004; Kunda, 1990). For instance, in Beatty and Thompson (2012) undergraduates evaluated short research scenarios, all of which included a weak correlation between two variables. Half of the scenarios were consistent with participants' beliefs and half were inconsistent with their beliefs. Participants' task was to evaluate the evidence in a research scenario and to select the conclusion that best fit the evidence (a) from the perspective of the researcher who conducted the study, and (b) from their own perspective. The task instructions reduced participants' reliance on beliefs when asked to judge which conclusion was best justified by the evidence. That is, when they evaluated belief-inconsistent scenarios, participants selected the best conclusion with greater success when they evaluated the scenario from the researcher's perspective than from their own perspectives.

A related line of research has shown that task instructions can affect strategy use, comprehension, and essays when individuals read controversial or conflicting information. For instance, Kobayashi (2009) asked undergraduates either to read to find relations among writers' arguments or to read to form an opinion. Participants were also allowed to use external strategies (e.g., take notes, underline) while they read. With respect to strategy use, participants in the relation-finding group produced more inter-textual notes and discrete summaries, whereas participants in the opinion-forming group produced more personal ideas. With respect to comprehension, participants in the relation-finding group comprehended inter-textual relations better than participants who were asked to read to form an opinion. Similarly, Kobayashi (2010) measured undergraduates' beliefs about a controversial topic (e.g., daylight savings time) before they read texts that were consistent or inconsistent with their beliefs. In post-reading argumentative essays, participants were less likely to include favorable comments about attitude-inconsistent information in their essays. Nussbaum and Kardash (2005) measured undergraduates' attitudes about a controversial topic (i.e., the relation between tv and violence) and gave them different writing task instructions. They found that individuals with more extreme attitudes included fewer counterclaims (i.e., claims that opposed their final claims) in their essays.

Thus, previous research has shown that individuals' beliefs can become stronger after they read belief-consistent and belief-inconsistent information (e.g., Lord et al., 1979; Plous, 1991; Taber, Cann, & Kucsova, 2009) and that participants' topic beliefs can influence how they argue about belief-relevant information (e.g., Kobayashi, 2010; Nussbaum & Kardash, 2005). However, previous research has not investigated how participants' justify their beliefs (i.e., reasons for holding their beliefs), and whether their justifications change after they read belief-relevant information. In the present study, we aimed to extend previous research by measuring adolescents' topic beliefs and belief justification before and after they read a dual-position text that included belief-consistent and belief-inconsistent information.

2. The present study

We investigated whether task instructions affect topic beliefs and topic belief justifications. To do this, we used an embedded sequential mixed methods design, which enabled us to examine both quantitative and qualitative aspects of topic beliefs (Creswell & Plano Clark, 2011). We selected this type of design because it is ideally-suited to provide insights into experimental findings (Creswell & Plano Clark, 2011). This two phase design began with the collection and analysis of *quantitative* data (i.e., an experiment), followed by the subsequent collection and analysis of *qualitative* data (i.e., interviews). In the quantitative phase, we conducted an experiment. We randomly assigned participants to one of four conditions, asked them to indicate and justify their beliefs about a controversial topic (i.e., whether they believed a main tunnel in their city should be widened), gave them their respective task instructions before they read, and then measured their beliefs and justifications again after they read. The purpose of the *qualitative* phase was to explain the results from the *quantitative* phase. With this type of mixed methods design, a researcher identifies specific quantitative results that need additional explanation. In the