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Epistemological beliefs and the effect of authority on argument–counterargument integration: An experiment

Kelly Y.L. Ku[a,*], Eva C.M. Lai[b], K.T. Hau[c]

[a] Department of Education Studies, Hong Kong Baptist University, Hong Kong
[b] Department of Psychology, The Chinese University of Hong Kong, Hong Kong
[c] Department of Educational Psychology, The Chinese University of Hong Kong, Hong Kong

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ABSTRACT

Personal epistemology describes an individual's beliefs about the structure, stability and sources of knowledge and knowing. These beliefs contribute to how we interpret information, weigh evidence and justify an argument. In this study, we examined whether exposure to information from an authoritative source affects Chinese students' performance in a subsequent argumentation task that required integrating conflicting views. Furthermore, we examined how epistemological beliefs interact with the effect of authoritative information on argumentation performance. 204 undergraduates participated. The results suggested that the participants who were experimentally exposed to authoritative information generated fewer counter reasons and produced arguments that were less elaborated and weaker in strength than those produced by participants who were not exposed to authoritative information. Specifically, the experimental manipulation had a more significant effect on those who held a belief that knowledge is drawn from authority than on those who perceived knowledge as constructed. In addition, the performance of those who believed knowledge is complicated and ever-changing was hampered under the experimental condition. Theoretical and practice-based implications are discussed.

1. Introduction

Good thinking is manifested through the process of argumentation. Argumentation skills are crucial for preparing students to participate critically in a liberal society. In simple terms, to argue is to persuade or to defend an idea. As social issues are often complex and ambiguous, good reasoning requires that a person weigh and integrate contrasting ideas for a cohesive and logical conclusion. Nussbaum and Schraw (2007) referred to this process as argument–counterargument integration. It is believed that incorporating counter views and evidence strengthens an argument, as thoughts are considered in conjunction, hence allowing a more justified conclusion (Nussbaum, 2011).

An individual's representation of the nature of knowledge has been consistently found to relate to his or her approach towards defence or justifying an argument (e.g., Chan, Ho, & Ku, 2011; Kardash & Howell, 2000; Mason & Boscolo, 2004). In this study, we examined the relations between the influence of authority, personal epistemology and argumentation performance. Although some empirical evidence has been found on how authority influences an argument's convincingness (e.g., Inglis & Mejia-Ramos, 2009; Schommer-Aikins, 2004; Youn, 2000), investigations linking the influence of authority

* Corresponding author. Tel.: +852 3411 5679; fax: +852 3411 7894.
E-mail address: kellyku@hkbu.edu.hk (K.Y.L. Ku).

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and personal epistemology on argumentation in Asian contexts have been rare. We designed an experiment to examine whether presenting information from an authoritative source affects how Chinese university students approach a subsequent argumentation task requiring the integration of conflicting views. We also examined how epistemological beliefs moderate the effects of authority on argument–counterargument integration.

2. Linking epistemological beliefs and skills in argumentation

2.1. Conception of skills in argumentation

In basic terms, an argument is a conclusion supported by at least one relevant reason. The process of argumentation can be broken down and the necessary skills individually identified and assessed (Kuhn & Crowell, 2011). These skills include distinguishing opinions from facts, examining the truthfulness of assumptions, evaluating the strength of reasons, recognizing fallacies, etc. Junior-secondary students are often first taught to approach a topic from an either–or perspective, which emphasises the quality of reasons and evidence for a chosen perspective. As students advance, the emphasis gradually shifts to considering how counter-evidence should be acknowledged and addressed to better capture the ill-structured nature of real-world issues. In defending a proposition, sophisticated argumentation demands the process of argument–counterargument integration, in which a person takes a step back from his or her own perspective, recognizes the multifaceted nature of an issue and synthesizes and evaluates evidence for and against each facet before reaching a final conclusion (Nussbaum, 2008).

Nussbaum (2008) introduced three paths to effective argument–counterargument integration: (1) weighing reasons given by different sides to arrive at a perspective with the strongest reasoning, (2) refuting a weaker side by identifying flawed reasoning and (3) generating an alternative conclusion that considers the merits of both sides. Common to these strategies is a deliberate effort to think contrary to a favoured side. Such effort brings depth to the analysis of the issue at hand, prompts metacognitive monitoring, allows for self-reflection and encourages a more objective examination (Kuhn & Crowell, 2011).

2.2. Empirical evidence on the relationships between epistemological beliefs and argumentation skills

How individuals construct arguments has been found to be related to their beliefs about knowledge, which describe their understanding of its structure, sources and stability as well as their beliefs about how knowledge is acquired (Bråten*, Ferguson, Strømsø, & Anmarkrud, 2012; Mason & Boscolo, 2004; Nussbaum & Kardash, 2005). Following Perry's original work on personal epistemology in the 1970s, subsequent researchers have created different personal epistemology models (see Duell & Schommer-Aikins, 2001; Hofer, 2001; Hofer & Pintrich, 1997, for review). One such widely adopted model (Schommer, 1990) put beliefs about knowledge into five dimensions: simple knowledge (i.e. knowledge as isolated versus interrelated), certain knowledge (i.e. knowledge as unchanging versus evolving), omniscient authority (i.e. knowledge as passed down from higher agent versus the source of knowledge as challengeable), quick learning (i.e. learning takes place quickly or not at all versus learning takes place gradually) and innate ability (i.e. intelligence is fixed entity versus intelligence is acquired). The literature shares a general consensus that individuals who have less developed levels of epistemological beliefs are referred to as naïve believers while those with more advanced levels of epistemological beliefs are called sophisticated believers. Nonetheless, Elby and Hammer (2001) challenged the perspective that sophisticated beliefs are always superior. They suggested that the sophistication of a person's epistemological beliefs might lead to more or less productive learning strategies in tasks with different learning goals and levels of difficulty. Bromme, Pieschl, and Stahl (2010) revealed that a person's sophisticated beliefs might be activated in certain contexts and not in others. Therefore, a learner might approach a learning task in a "naïve" manner despite his or her potential to adopt a more sophisticated approach. These views have extended the general understanding of personal epistemology by linking beliefs about knowledge with other factors of learning, urging researchers to further examine the domain specificity of personal epistemology.

Using the five beliefs of Schommer's model (1990), earlier studies found that university students who held the naïve epistemological belief that knowledge is isolated and unchanging tended to write simplified or absolute conclusions that were unable to reveal the inconclusive nature of controversial issues such as abortion, AIDS and morality (Bendixen, Schraw, & Dunkle, 1998; Kardash & Scholes, 1996; Schommer-Aikins & Hutter, 2002), despite being presented with opposing views. In contrast, sophisticated epistemological beliefs positively contributed to higher school achievement (Rodríguez & Cano, 2006), and predicted students' argumentation performance in generating counter-reasons and rebuttals for controversial topics (Mateos et al., 2011). In studies that investigated learning about science topics, such as evolutionary issues, students with naïve epistemological beliefs were less willing to accept a scientific explanation (Sinatra, Southerland, McConaughy, & Demastes, 2003) or to accept a refutation of their existing misconceptions (Qian & Alvermann, 1995). Kardash and Scholes (1996) found that students' propositions about knowledge were linked to their subjective interpretations of issues and how they selected information that justifies their interpretations. For instance, students with a stronger belief in the certainty of knowledge were more likely to overlook the inconclusive and tentative nature of mixed evidence when writing conclusions. In a later study, Kardash and Howell (2000) found that naïve believers used fewer cognitive strategies when reading dual-position text, and distorted contradictory information to make it consistent with their prior beliefs when asked to recall the textual information.