



Developing and testing a model of direct and indirect relationships between individual differences, processing, and multiple-text comprehension



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ABSTRACT

The purpose of this study was to test a hypothesized model that specified direct and indirect linkages between the individual difference variables of epistemic beliefs, need for cognition, individual interest, and prior knowledge, the processing variables of effort, deeper-level strategies, and situational interest, and multiple-text comprehension. Using a path analysis approach with a sample of 279 Norwegian upper secondary school students, results indicated that students' effort and deeper-level strategies predicted their multiple-text comprehension, with the individual difference variables indirectly affecting multiple-text comprehension through their influence on effortful, adaptive multiple-text processing. In addition, students' prior knowledge about the topic of the texts seemed to affect their multiple-text comprehension directly as well as indirectly. Both theoretical and educational implications of the results are discussed.

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1. Introduction

The 21st-century reading context is unprecedented in its demands on readers, both in and out of school, to integrate contents across multiple sources that express diverse and even contradictory viewpoints (Alexander, 2012; Goldman et al., 2011; Rouet, 2006). To take advantage of the abundance of differing textual information sources on almost any issue, however, readers must want and even enjoy investing time and effort in intertextual practices that result in comprehension rather than confusion (Guthrie & Wigfield, 2000; Van Meter & Firetto, 2008). But such motivated, effortful processing of multiple texts is not evenly distributed among readers; rather, they are more typically observed among readers characterized by certain beliefs, dispositions, orientations, and knowledge (Alexander, 2012; Rouet & Britt, 2011). Thus, our main assumption in the present study is that when readers try to construct meaning from multiple conflicting texts on a particular issue, adaptive text processing is a proximal contributor to comprehension performance through which more stable reader characteristics work. Specifically, we set out to test this assumption about mediation by creating a model of multiple-text comprehension where processes

related to effort, deeper-level intertextual strategies, and on-task interest mediate the effects of reader characteristics related to epistemic beliefs, need for cognition, individual interest, and prior knowledge on comprehension performance. Although most of these individual difference and process variables have been discussed in emerging theory and research on multiple-text comprehension (Bråten, Britt, Strømsø, & Rouet, 2011; Britt, Perfetti, Sandak, & Rouet, 1999; Goldman et al., 2010; Rouet & Britt, 2011), they have not been included in a model that specify direct and indirect linkages between variables and test such complex relationships collectively. We included these particular individual difference and process variables in our model on the basis of theoretical assumptions as well as empirical support. In the following sections, we briefly review conceptualizations relevant for understanding multiple-text comprehension and related components, before we turn to prior research concerning relationships among those components that provides empirical support for the hypothesized relationships in our model.

Given that multiple-text comprehension seems to be a great challenge regardless of age (Rouet, 2006), readers may need instructional support to read intertextually and integrate information across texts (Britt & Rouet, 2012; Van Meter & Firetto, 2008). Hopefully, this study may help clarifying the importance of teachable intertextual reading strategies for multiple-text comprehension and provide much needed information about the network of other processing variables and individual difference variables in which such strategies are embedded.

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1.1. Multiple-text comprehension and its components

Multiple-text comprehension refers to a coherent mental representation that integrates contents from multiple texts that deal with the same situation or issue (Britt et al., 1999; Goldman, 2004; Rouet, 2006). In multiple-text comprehension, synthesizing or integration of information may occur when information across different texts is consistent, componential (i.e., information across texts is part of a larger whole not specified in any single text), or conflicting. In the current study, we focused on multiple-text comprehension involving texts dealing with the same issue from different perspectives by having students read about the controversial scientific issue of sun, sunbeds, vitamin D, and health (Moan, Baturaite, Juzeniene, & Porojnicu, 2012) in multiple conflicting texts. In such a situation, comprehension of the issue is not attained by encapsulating the meaning of each single text.

In Kintsch's (1988, 1998) construction–integration model of single-text comprehension, deep comprehension is achieved when readers move beyond the text-internal meaning of a text and integrate text information with prior knowledge to interpret the situation described in the text (i.e., creates a situation model). In multiple-text comprehension, however, readers need to not only comprehend each single text but also integrate information across different texts to create a global understanding of a situation or issue discussed across texts. When these texts present conflicting information about the same issue (e.g., that sun exposure is harmful vs. that sun exposure is healthy), integrating information across texts may be facilitated by attention to the sources of the different texts (e.g., authors or publications), relationships between the sources and text contents (i.e., who says what), and relationships between the sources (e.g., that author A contradicts author B). While the additional representational structures needed to comprehend multiple texts in comparison to single texts (i.e., a representation of the integrated information across texts and a representation of sources, source–content links, and source–source links, respectively) were originally described by Britt and colleagues (Britt et al., 1999; Perfetti, Rouet, & Britt, 1999), updated versions of their “documents model framework” are presented in more recent work (Britt & Rouet, 2012; Britt, Rouet, & Braasch, 2013; Rouet, 2006). In essence, the documents model framework explains how good readers trying to comprehend the contents of multiple texts dealing with the same issue from different perspectives may build an integrated mental model of the issue described across texts, at the same time taking note of the sources of the different perspectives and understanding the relationships (e.g., similarities and differences) among them (Bråten et al., 2011). Presumably, when readers note relationships between sources and contents as well as between different sources, such information will help them understand the conflict and reconcile the different perspectives (Britt et al., 2013; Strømsø, Bråten, & Britt, 2010).

While readers during multiple-text comprehension may profit from comprehending each individual text deeply, that is, create a full situation model for each text (Britt & Sommer, 2004), it seems likely that it sometimes suffices to skim parts of a text (e.g., parts presenting undisputed factual information or reiterating information from other texts) and read carefully only those parts where the author presents unique or conflicting information, as for example signaled by a subheading (Bråten et al., 2011). In any case, during multiple-text comprehension, the comprehension of any single text in a text set is probably influenced by the fact that this text is not read independently but as one of a set. Accordingly, in Afflerbach and Cho's (2009, p. 80) taxonomy of “constructively responsive reading comprehension strategies used in reading multiple texts”, reading behaviors such as “predicting contents of current text based on understanding of previously understood text” and “detecting a

comprehension problem with a particular text and trying to solve the detected problem by searching for clarifying information in other available texts” indicate that each text may profitably be interpreted in light of the contents of other texts in the set.

Presumably, the processing that supports the creation of the representational structures needed to comprehend multiple conflicting texts will take the form of an effortful, motivated, and intertextual strategic approach. This is because a text set will rarely include explicit intertextual citations that direct readers how to connect the texts and, essentially, readers themselves are therefore the authors of the integrated documents model (Britt & Rouet, 2012). Several types of more permanent reader resources (Rouet & Britt, 2011) may further be supposed to underlie such processing. In the following, we briefly refer to some recent conceptualizations that highlight the role of adaptive, intertextual strategic processing in multiple-text comprehension as well as a set of reader characteristics that may be conceived to underlie such processing. Given that effective and efficient processing of multiple conflicting texts on a complex, controversial issue may make particular demands on readers, not only the cognitive but also the motivational and personality systems of individuals are probably involved in meeting them (Alexander, 2012; Rouet & Britt, 2011).

In a recent framework addressing processes supporting multiple-text comprehension, the MD-TRACE (Multiple-Document Task-based Relevance Assessment and Content Extraction) model, Rouet and Britt (2011) describe the importance of a strategic approach involving comparing, contrasting, and corroborating across texts. For example, readers may strategically compare perspectives and look for consistencies and discrepancies among perspectives, helping them to reconcile different views and constructing an integrated understanding of the issue. Likewise, Goldman et al.'s (2010) “Student model for multiple-source comprehension” highlights intertextual strategic processing, in particular, comparing and synthesizing arguments (i.e., claims and evidence) across different texts. Of course, the intertextual processes focused by Rouet and Britt (2011) and by Goldman et al. (2010) also require effort and motivational involvement with the texts, with such processes especially highlighted in the engagement model of reading comprehension forwarded by Guthrie and Wigfield (2000), where intrinsically motivated and strategic processes work together in building conceptual understanding from diverse reading materials.

Regarding reader characteristics considered favorable in complex reading-task contexts, Bråten et al. (2011) recently proposed a model incorporating epistemic beliefs, that is, beliefs about knowledge and knowing (Hofer & Bendixen, 2012), into a theoretical framework for explaining multiple-text comprehension. In this framework, beliefs about the simplicity, certainty, and source of knowledge, as well as beliefs about justification of knowledge claims, were all related to multiple-text comprehension. For example, beliefs in the need to justify knowledge claims through reason, rules of inquiry, and the evaluation and integration of multiple sources were considered to facilitate multiple-text comprehension because they may promote intertextual strategic processing and help readers organize their mental representations as integrated argument schemas.

Although more focused in work on personality and social psychology than on reading, need for cognition can also be assumed to be a relevant reader characteristic in the challenging task context of trying to construct coherent meaning from multiple conflicting texts. Defined as an individual's enduring disposition to “engage in and enjoy effortful cognitive endeavors” (Cacioppo, Petty, Feinstein, & Jarvis, 1996, p. 197), it signals a domain-general propensity for persistence, thoroughness, reflection, and commitment when working on cognitive demanding tasks that also can be brought to

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