The Influence of Thinking Dispositions on Integration and Recall of Multiple Texts

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Author Note

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Abstract

We investigated the association between thinking dispositions (need for cognition and actively open-minded thinking) with two outcomes of multiple-text comprehension: integration of conflicting information and recall of inferential information. The participants were 73 university students who completed questionnaires on control variable measures (perceived knowledge and beliefs) and thinking dispositions, read two contradictory texts, wrote an argumentative essay, and recalled the information read one month later. Argumentative essays were coded by intertextual integration, recalls by number of valid inferences. Need for cognition was indirectly associated with intertextual integration. Actively-openminded thinking was associated with inferences recalled.

Keywords: thinking dispositions; actively-openminded thinking; need for cognition; multiple-text comprehension; recall

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In the present-day knowledge society, to participate in the democratic discourse, people need to critically comprehend and integrate information across multiple sources that express diverse and contradictory viewpoints. Intertextual integration, that is, going beyond the perspectives presented in the texts and elaborating a coherent approach, is the core element when writing from contradictory texts (Mateos et al., 2018). In an argumentative essay, intertextual integration implies being aware of the arguments supporting the different perspectives involved in the controversy and trying to solve the dispute. The writer may employ a variety of strategies when dealing with the different viewpoints, which vary in the degree of integration of arguments and counterarguments (Mateos et al., 2018). For instance, intertextual integration may be achieved by synthesizing: the author identifies an intermediate position between the conflicting perspectives, which retains advantages (identification of better arguments) and minimizes disadvantages (acceptance of counterarguments) (Mateos et al., 2018).

However, the effortful processing of multiple texts is not always effective, even among adults. Past research on individual differences associated with multiple-texts performance has partially neglected the role of thinking dispositions. Thinking dispositions are cognitive styles that reflect the individual's beliefs, belief structure, attitudes toward the role of beliefs in rational thinking, and belief change, goals, and epistemic values (Stanovich et al., 2011). Thinking dispositions, such as Need for Cognition (NFC, Cacioppo and Petty 1982) or Actively-openminded thinking (AOT, Stanovich and West 1997), are deeply involved in complex tasks, such as multiple-text comprehension.

To advance current research on multiple-text comprehension, we investigated the association between two thinking dispositions, namely NFC and AOT, and multiple-texts comprehension, as assessed through an argumentative essay and a recall task. For the argumentative essay, we included in the statistical analyses intertextual integration (Mateos et al., 2018) as an outcome variable and essay length as a mediator (MacArthur et al., 2019). For the recall task, we measured valid inferences generated as an index of the quality of long-term text recall (see Diakidoy et al., 2015).

Method

Participants

Seventy-three university undergraduate students participated in the study (Age = 21.74 ± 3.76, 69 females).

Materials

Self-report questionnaires. The following control variables were assessed: Perceived competence (3 items on a 6-point Likert scale); prior beliefs (6 items on a 6-point Likert scale); thinking dispositions (Need for cognition: 18 items on a 5-point Likert scale, Cacioppo and Petty 1982; and Actively-openminded thinking: 41 items on a 6-point Likert scale, Stanovich and West 1997).

Texts. Students were assigned two texts about the evaluation of teachers (one pro, one against, translated from Mateos et al., 2018), with the following instructions: "*Please, read these two texts discussing two different positions on a controversial topic in Education. Your task is to write an argumentative essay in which you discuss your perspective, taking into consideration what you have read* ". Texts were presented on screen. Text order was randomly varied among the participants.

Argumentative essay task. Immediately after reading the texts, students were asked to write an argumentative essay reporting their stance (coded by intertextual integration, Mateos et al., 2018). The following scores were assigned (a second rater coded 50% of the essays, $k = .78$):

0 points) no sources-based (opinion not based on the arguments presented on the source texts);

1 point) neutral position (a clear standpoint is not identified because arguments of the two positions are presented but not integrated);

2 points) supporting a position (one of the positions is defended, basically considering its arguments and not the other view);

3 points) integration of two positions via refutations (reasons for both positions are considered but the opposite view's arguments are just refuted);

4 points) minimal integration via weighting or synthesis (one position is defended, but at least two arguments of the other view are valued, and the conclusion is partial);

5 points) partial integration via weighting or synthesis (one position or both are claimed, including arguments of both views integrated but the conclusion is missing or partial);

6 points) full integration via weighting or synthesis (the essay concludes with a real overall conclusion, considering several arguments of both positions integrated).

Recall task. A month after the reading task, students were asked to recall what they had read in the texts (coded by number of valid inferences, Diakidoy et al., 2015). Texts were available while writing the essay but not when recalling.

Procedure

Data were gathered over two months in four steps. First, students' self-report questionnaires were administered. Second, students were assigned two texts to read. Third, immediately after reading the texts, students were asked to write an argumentative essay. Finally, a month after, students were asked to recall what they had read in the texts. The research question was investigated with a path analysis approach. AOT, NFC, perceived competence (a factor composed of perceived topic knowledge, perceived exposure to argumentative essay instructions and perceived competence in argumentative writing), and prior topic beliefs were included as independent variables. We estimated their effects on argumentative essay quality and the number of valid inferences recalled.

Results

The estimated path model had a good fit [χ^2 = 27.71, p =.37; RMSEA =.03; CFI = .98], see Figure 1.

Figure 1

Path analysis model with significant standardized path coefficients (NFC = Need for cognition; AOT = Actively-openminded thinking; [*]p < .05)
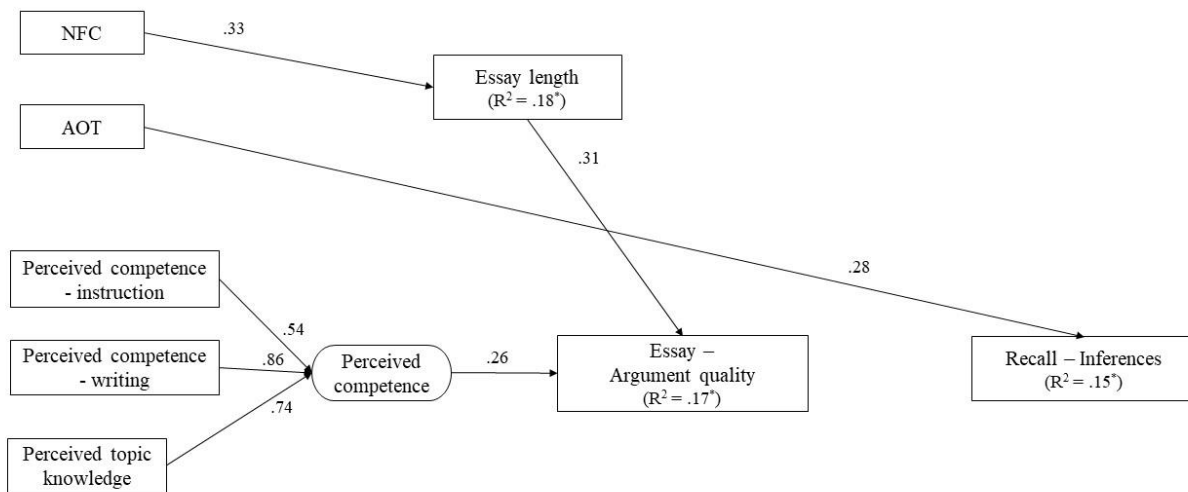
NFC was positively associated with the essay length [β =.33, $p < .01$], and AOT was positively associated with the number of valid inferences recalled [β =.28, $p < .05$]. The essay length was positively associated with the argumentative essay quality [β =.31, $p < .05$]. Neither AOT nor NFC were directly associated with argumentative quality, however NFC was indirectly associated with argumentative quality via the essay length [β = .10, S.E. = .06, p = .05, 95% C.I.

= .01; .20]. Perceived competence was positively associated with argumentative quality [β =.26, $p < .05$] but not with the essay length. Argumentative quality and valid inferences recalled were not significantly associated. Overall, effect sizes were small-to-moderate.

Discussion

The two most relevant results were that i) NFC was directly associated with the essay length and indirectly associated with argumentative essay quality, and ii) AOT was directly associated with valid inferences recalled. AOT may support depth of comprehension through epistemic self-regulation, inducing a disposition to go beyond our own beliefs, and consider new scenarios. The "active" component may also induce a higher agency to the reader, making him/or her more active in the processing of texts. Whereas NFC seems associated with a higher effort and/or engagement, AOT seems associated with a higher elaboration of both perspectives (Stenhouse et al., 2018). Unexpectedly AOT was not associated with the level of intertextual integration. The essay length appears to play a relevant role in students' multiple-texts comprehension behavior (MacArthur et al., 2019).

In this study, the argumentative essay quality was not significantly associated with valid inferences recalled. Whereas this result may seem unexpected, past studies have found that students' argumentative thinking (in the form of evaluation of arguments) were not associated to recall, probably because the information was not deeply elaborated (Diakidoy et al., 2015, 2017). This lack of association is problematic because students seem to struggle in creating an integrated situation model of the texts, despite the level of integration between arguments discussed in the texts.

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