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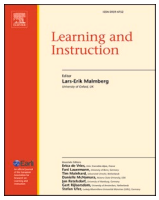

Examining myside bias on a controversial historical event after engagement in dialogic argumentation: Insights from a think aloud study

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ABSTRACT

The main objective of this exploratory study was to examine students' reasoning – particularly myside bias – on a controversial historical event using rich think aloud data, before and after being engaged in extensive dialogic argumentation on a non-historical topic. Elementary school students engaged in a nine-session argument-based intervention. For 30 students — a subset of the 116 participants who engaged in the intervention and who constitute the focus of this study — myside bias was assessed before and after their engagement in the intervention, using the think-aloud methodology. Students were asked to read two accounts about a recent war in their country—an own-side account from a historian of their ethnic group and an other-side account from a historian of the adversary ethnic group—and to think aloud. The analysis of the think-aloud protocols shows that participants responded differently when reading the own-side account vs. the other-side one. In particular, participants expressed significantly more statements that supported the other-side when reading the other-side's account than when reading their own-side's account. This shows that engaging with the other-side account, as revealed by the think-aloud process, can promote a deeper understanding of the other side. Moreover, they made more evaluative comments post-assessment than pre-assessment. However, their evaluative comments were still in favor of their own position, which shows how resilient myside bias is to change. Overall, our findings suggest that the think-aloud methodology is a valuable tool for identifying (changes in) myside bias and the conditions that facilitate it.

1. Introduction

Myside bias, evident when individuals evaluate or generate evidence in a manner biased toward their own opinions (Stanovich & West, 2008), has been identified as the primary psychological contributor to society's failure to achieve belief convergence on many crucial issues (Stanovich, 2023). Myside bias on controversial historical issues, in which individuals favor the position of their ethnic group, can also jeopardize the peaceful co-existence of different ethnic/cultural groups, especially if there is a history of conflict between these groups. Crucially, neither intelligence nor education inoculates against this bias, which is incredibly prevalent among people, irrespective of demographics (Ditto et al., 2019).

Myside bias on historical events has received limited attention in the my-side bias literature in psychology and history teaching, the latter being a school subject likely to touch on such controversial issues. The majority of previous intervention studies on my-side bias have focused on argument construction (Felton, Crowell & Liu, 2015) or general reasoning tasks (Macpherson & Stanovich, 2007), rather than examining my-side bias when processing information during reading. A relevant line of research in the reading literature are studies focusing on integration of information from multiple texts. Explicit strategy instruction for comparing and contrasting conflicting information (Barzilai & Ka'adan, 2017), prompts for identifying and resolving contradictions across texts (Bråten, Braasch & Salmerón, 2020), and scaffolds for evaluating source credibility (Braasch et al., 2013) are common interventions which have supported integrating information from multiple texts, particularly in scientific topics that this line of research has focused on. The limited evidence from the history domain showed that direct teaching of a structured process for analyzing historical documents and considering different perspectives with 11th graders (aged 16–17) is an effective way for improving high school students'

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argumentative essay writing, as evidenced by their inclusion of rebuttals (De La Paz & Felton, 2010). However, the issue of examining and addressing younger students' my-side bias, such as elementary school students, on controversial and emotionally charged historical topics has not been investigated, revealing a profound gap in the my-side bias literature. Yet, it is important to examine students' beliefs on historical events because these beliefs might give rise to present biases toward other ethnic groups. Previous studies have examined this issue in adults (e.g., Iordanou, Kendeou & Zembyla, 2020), but evidence in young people has yet to be sufficiently investigated.

Research shows that children as young as 2 or 3 demonstrate precursors of argumentative skills (Arendt, 2020), with even young children using simple evidence like physical demonstrations to support claims (Mascaro et al., 2019). Children employ multiple modalities including vocal-articulatory features and gestures (Hannken-Illjes & Bose, 2019), adapting their strategies based on their relationship with their interlocutor and the interaction's cooperative vs. agonistic nature (Howe & McWilliam, 2001). Children's argumentative abilities develop with age — from basic assertions at age 5 to more sophisticated tactics like refutations and justification requests by age 7 (Domberg et al., 2018; Hannken-Illjes & Bose, 2019). They also learn to evaluate positions and use linguistic resources like evidentials and politeness markers (Shiro et al., 2019). However, these skills remain context-dependent, emerging most strongly in cooperative settings like play (Domberg et al., 2018; Bose & Hannken-Illjes, 2020). Without social support, even older children and adults struggle with complex argumentation, particularly perspective-taking in individual contexts (Kuhn & Iordanou, 2022) or integrating multiple perspectives when reading multiple texts (OECD, 2023).

In addressing this need, previous work on an established argument-based intervention showed gains in individuals' reasoning as they became more reflective and acknowledged multiple perspectives on an issue (Kuhn et al., 2008). These findings were evident in argumentative writing (Shi et al., 2019) and showed transfer of argument gains across topics (Iordanou, 2010), communication mode — from arguing on the computer to handwritten individual essays (Iordanou, 2022; Shi, 2020a) as well as face-to-face argumentation (Iordanou, 2013). The gains in argumentation skills also transferred from dialogic argumentation to reading multiple texts with different perspectives on a topic (Iordanou & Fotiou, 2025).

In the present work, we examine students' reasoning on a controversial historical issue after being engaged in extensive dialogic argumentation on a non-historical topic, focusing in particular on possible changes in myside bias. The theoretical framework derives from the notion that dialogic and individual reasoning are closely related types of reasoning (Kuhn, 1991). A familiar interpersonal activity —everyday talk— has the potential to develop into a more formal, symbolic, and intrapersonal one. According to Graff (2003), the inter-mental, through practice, becomes interiorized and transformed into the intra-mental.

2. Using think-aloud methodology to assess myside bias

The think-aloud methodology, which involves thinking aloud after reading a sentence, is a valuable research method used across various fields to gain insights into an individual's thinking, information processing, comprehension, problem-solving, and decision-making. This methodology allows researchers to gain a deep understanding of how individuals process and evaluate information, revealing not just one's final judgments but also the reasoning behind them (e.g., Wolcott & Lobczowski, 2021). This methodology has previously been used to gain insights into undergraduate students' cognitive processes when reading multiple conflicting documents (Ferguson et al., 2012), as well as into experts' epistemic performance (Greene et al., 2021). Researchers can detect when participants selectively attend to confirming evidence, dismiss opposing viewpoints, or use biased language. This immediate insight is valuable for understanding the cognitive mechanisms at play. In the present study we employed the think-aloud methodology to assess reasoning and myside bias. Myside bias has been empirically examined mostly through argument evaluation (Čavojová et al., 2018; Stanovich & West, 2008), argument generation paradigms (Macpherson & Stanovich, 2007), or by using scenarios (Stanovich & West, 2008). In this study, we employed the think-aloud methodology to assess myside bias, given its successful implementation for this purpose in an adult sample (Iordanou et al., 2020). We hypothesize that the think-aloud is a powerful methodology for examining myside bias, not only because it captures it, but also because it uncovers when and under which conditions myside bias occurs, changes, or fails to change.

3. The current study

The current exploratory study aims to address the following research question, focusing in particular on myside bias during reasoning and using rich think-aloud data: How do students reason about multiple historical texts on a controversial historical event after engaging in extensive dialogic argumentation on a non-historical topic? Students engaged in an argument-based intervention on a non-historical topic (e.g. the effects of soda consumption) and were then examined on how they responded when reading texts on a novel, historical topic (the 1974 war in Cyprus). We examined students' reasoning on a controversial historical event, after engaging in an established argument-based intervention aimed at promoting students' argumentative skills (see Iordanou & Rapanta, 2021, for a review of studies), using the think-aloud methodology. We used the think-aloud methodology at the pre- and post-phase of our study with authentic sources about a historical event, the 1974 war in Cyprus, which is controversial in ethnically-divided Cyprus.[1] 6th-grade elementary school students from the Greek-Cypriot community were asked to read a text written by a Greek-Cypriot historian representing their "own-side" view and a text written by a Turkish-Cypriot historian representing the "other-side".

[1] The Cyprus Issue Issue refers to the unresolved conflict between the two main ethnic communities of Cyprus: the Greek-Cypriot and the Turkish-Cypriot communities. Cyprus became a Republic in 1960 after a period of British colonial rule which began in 1878, when Britain took over the administration of Cyprus from the Ottoman Turks, who were ruling the island from 1571. As Bryant (2004) and Papadakis et al. (2006) explain, during the British colonial period there is rise of Greek and Turkish nationalism on the island. In fact, the anti-colonial struggle led by the Greek-Cypriot guerilla organization EOKA did not fight for independence but for union with Greece, while the Turkish-Cypriot Organization (TMT) aimed for a partition of the island in two parts: the Greek and the Turkish one. It was not long after the independence that intercommunal violence broke out (especially during 1963 and 1964) during which the Turkish Cypriot community suffered most of the casualties and saw a substantial part of its people displaced in 'ethnic enclaves' (Papadakis et al., 2006, Patrick, 1976). The events of this period are generally absent from the official national discourse of the Greek Cypriot community while they are prominent in the official narrative of events of the Turkish Cypriot community.

In 1974, after a coup d' état on July 15 against the president of the Republic, which was carried out by EOKA B—a Greek-Cypriot paramilitary pro-union-with-Greece organization—with the support of the Greek junta, which was in power in Greece at the time, Turkey carried out a military intervention which resulted in the occupation of the northern part of Cyprus and the de-facto partition of the island even since As Papadakis et al. (2006, p. 2) emphasize, this time it was the Greek-Cypriot community that suffered the greatest loss, with almost one-third of its population displaced, with many casualties and missing persons. Turkey's military intervention is referred to as an *invasion* in the Greek-Cypriot narrative of events but as *a peace operation* in the Turkish-Cypriot one. In the latter, the operation was deemed to be Turkey's right—granted by its status as a guarantor country in the Treaty of Guarantee that was signed in 1960—to protect the Turkish-Cypriot community from the Greek- Cypriots. One of the complexities of the Cyprus Issue is that early on after 1974, Turkey began to bring Turkish settlers to change the demographics of the northern part; this issue is considered very sensitive for Greek-Cypriots.

For the actual intervention, students engaged in an argument-based dialogic intervention for nine sessions. The dialogues took place on an electronic device following the successful implementation of this method in previous studies, which showed that, besides its motivational benefits, the use of technology supports students in reflecting on their work by providing an immediate written record that they can use as an object of reflection (Iordanou, 2022; Kuhn et al., 2008).

"Evidence"—both evidence use and evidence evaluation—had a prominent role in the implemented intervention. We hypothesized that, to address myside bias, it is important for individuals to examine whether claims are supported by evidence, as well as the relevance and quality of the evidence used. Our main objective in this work was to help students become more reflective both on their own position and on opposing positions, rather than merely accept claims at face value because of their consistency with their pre-existing, unexamined beliefs. To promote the construction of evidence-based arguments, students were provided with information from trustworthy sources relevant to the intervention topic that they could use. The information was presented in the form of questions and answers (Q&A), which seems to be a more effective way to support evidence use in argumentation compared to traditional texts (Iordanou et al., 2019; Iordanou & Kuhn, 2025). To help students evaluate evidence, they were also engaged in reflective activities that prompted them to reflect on the use of evidence to support their own claims and those of others. Students engaged in discussions with individuals who held opposing views, as hearing arguments that favored the opposing position—expressed by individuals known to hold that position—has been shown by previous research to be beneficial for participants' thinking (Iordanou & Kuhn, 2020). However, rather than focusing on the divergence per se between opposing positions, participants were asked to examine how these positions differ by evaluating the relevance and quality of evidence supporting the various claims made by each side, both their own and others' (Macagno, 2019; Rapanta & Felton, 2022).

For the intervention, we chose topics in which participants were likely to have minimal personal engagement and affective investment—conditions that previous research has shown to facilitate participants' ability to pay attention to and incorporate others' positions in their thinking through two-sided reasoning on a given topic—while also promoting transfer to a non-intervention topic (Kuhn et al., 2008). We moved from "distant" topics—illegal immigrants in the USA and soda consumption—to a sensitive controversial issue. Building on findings from previous research that demonstrated gains in individuals' reasoning after engaging in sustained argumentation, particularly at the meta level, appreciating the use of evidence and two-sided reasoning (Iordanou, 2022), which also transferred to a non-intervention topic (Iordanou & Rapanta, 2021), we hypothesized that this method could help reduce participants' myside bias and extreme ethnic-centered positions, supporting their ability to be reflective about their own position and less biased toward the opposing position.

4. Methods

4.1. Participants

Thirty 6th-grade elementary school students aged 11–12 (14 males and 16 females) from three different schools in Cyprus completed a think-aloud task before the intervention and 24 of them (11 males and 13 females) repeated the assessment after the intervention. These 30 students were a subsample of the total 116 participants (49 males, 67 females) that took part in the study. The remaining 86 students participated in the intervention but did not participate in the individual think-aloud interviews. Participants in the think-aloud task were selected by the teachers based on the criterion of being able to participate and meet the demands of such a task. No other performance criteria were taken into consideration when these suggestions were made. Students were recruited through their schools, and both teachers and students participated voluntarily in the study (no compensation was provided).

4.2. Measures

This study was part of a larger project studying reasoning and prejudice in Cyprus (project ARE-PRED, funded by the Research and Innovation Foundation). In the present work, we focus on the think-aloud data (see Supplementary Data 4 for method and results of using other measures — Intergroup Anxiety and Intended Behaviour Questionnaires).

4.2.1. Think-Aloud

The Think-Aloud methodology was used during pre- and post-tests to examine participants' myside bias in relation to two texts representing the Greek-Cypriot and Turkish-Cypriot perspectives on the Turkish military operation that took place in 1974. The Greek-Cypriot text, written by a Greek-Cypriot historian, represents the "own side," while the Turkish-Cypriot text, written by a Turkish-Cypriot historian, represents the "other side." The latter was translated into Greek for the purposes of the think-aloud task. We chose authentic texts that were part of the textbooks used in both Greek-Cypriot and Turkish-Cypriot schools (see Supplementary data S3 for the texts). Both texts were biased in favor of a particular ethnic group. For example, the Turkish-Cypriot historical text described the event as a "peace operation" during which Turkey intervened to establish peace in Cyprus, whereas the Greek-Cypriot historical text described it as an "invasion" that resulted in many Greek Cypriot refugees. The two texts were of comparable length: the Greek-Cypriot text contained 320 words and the Turkish-Cypriot text contained 309 words. Participants were given flashcards with each sentence from the two texts, asked to read each sentence aloud, and to think aloud about their thoughts and feelings. Each think-aloud session lasted 20–25 min and took place in one-to-one sessions with a researcher—one of the authors—in a designated quiet room provided by the school.

4.3. Argument-based intervention

The intervention involved an established discourse-based program designed to build argumentation skills (Iordanou et al., 2019; Kuhn et al., 2008). It consisted of nine 40-min sessions occurring twice per week, plus two sessions for pre- and post-group assessment. The intervention and the assessment— including the individual think-aloud sessions —spread over approximately 2 months—accommodating the school's schedule and Easter holidays—for each classroom and took place in the spring of 2023. Classes were randomly assigned to a social topic (illegal immigrants in the USA) or a physical science topic (soda consumption). Students were asked to take a position on the following questions: "What should happen to young people who were brought to the USA as children and now live there illegally? Should they *leave* or *stay* in the USA?" for the social topic, and "Do you think people who like soft drinks, have a balanced diet, and are relatively healthy can consume soft drinks in moderation, or do you believe that soft drinks have no benefit and are best avoided?" for the physical science topic. We chose two topics that were considered "neutral" for the students. Although the topic of illegal immigrants in the USA could be seen as somewhat related to the Cyprus Issue (and, in particular, with one aspect of the Cyprus issue which the students were asked to discuss, that is, the settlers brought illegally by Turkey to the occupied northern part of Cyprus), it was still neutral for the students, because it involved another country and another issue (i.e., immigration). Furthermore, any decision on this issue would not affect them in any way. This neutrality was evident from the fact that there was roughly an equal split among students who favored each option for the social topic—stay or leave—as well as for the physical science topic.

We implemented a stratified random sampling method to ensure that each topic was represented across the schools while allowing for an

unbiased distribution of topics among the available classrooms. The stratification was based first on the school and then on the classroom within each school. This method allowed us to control for potential school-specific effects (e.g., demographic differences, educational practices) that might influence the outcomes.[2]

The intervention took place in the context of the ARE-PRED project's platform, which was designed for the purposes of this project, and students accessed it through tablets. The platform includes a chat messaging application as well as an electronic database consisting of Question and Answer information on the topic, which the students could use. During session 9, students in both conditions discussed whether Turkish settlers in the Turkish-occupied part of Cyprus should continue living in Greek-Cypriots' refugee houses or whether they should be provided with alternative government housing in the event of a resolution to the Cyprus problem. Same-side pairs had a discussion with another pair who held an opposing position. We included this single session to facilitate transfer from the intervention topic, which was quite neutral for the students, to a local and more sensitive topic. Note that this topic was not about the historical event of 1974 per se, for which they had engaged in the think-aloud process, but rather about a current problem resulting from the island's political conditions since 1974. Below is a description of the curriculum employed.

Sessions 1–4. In the first four sessions, pairs of same-side position students engaged in an electronic dialogue with other pairs of students from their classroom who supported the opposing position for the first 20 min, followed by a reflective activity. Two reflection sheets supported the reflective activity: the own-side reflection sheet, which asked participants to reflect on the strength of the counterarguments they had constructed to the opposing side's position—considering the use of evidence—and the other-side reflection sheet, which asked participants to reflect on the rebuttals they used to weaken others' counterarguments. Students were also provided with relevant information on the topic in the form of Q&A cards; four new cards were provided in each session, and they remained available until the end of the program.

Session 5. Same-side students worked in groups of 5–6 to prepare for the showdown, having available the reflection sheets prepared in previous sessions. Students were encouraged to prepare counterarguments that could be used for the showdown, using different colored cards to depict arguments, counterarguments, and rebuttals. An adult coach (one of the authors) facilitated these discussions.

Sessions 6–7. In session 6, a class-level showdown took place. Participants on each side were seated in different rooms and communicated through IM software, with the dialogue projected onto a wall screen in each room. In the following session (7), the researchers provided feedback to the students in the form of an argument map, where different colors were used to label statements as either effective or ineffective argumentative moves, as well as to indicate the use of evidence to support claims.

Sessions 8–9. In the last two sessions, students were presented with the scenario for the transfer topic, Turkish-Settlers, and asked to take a position (Session 8). During Session 9, they then engaged in 20-min electronic dialogues with another pair of students from their classroom who supported the opposing position, as was the case with the intervention topic. Students were also provided with four Q&A cards containing relevant pieces of knowledge that they could use on this topic.

[2] The distribution of topics across the schools was as follows: School A consisted of two classes: Class 1 (n = 22) was assigned the physical science topic, and Class 2 (n = 20) was assigned the social science topic. School B also had two classes participating: Class 1 (n = 15) received the physical science topic, whereas Class 2 (n = 19) worked on the social topic. School C, with three classes, distributed the topics as follows: Class 1 (n = 17) was given physical science topic. Classes 2 (n = 7) and 3 (n = 16) both explored the social topic.

4.4. Think-Aloud Coding

The think-aloud protocols were transcribed, and participants' utterances were parsed into main ideas, generally consisting of a single clause (i.e., a subject and a verb), before being coded. However, the main criterion of what constituted a main idea was not linguistic in nature but the actual content. In other words, if there was a subordinate clause attached to the main clause unit which was part of the idea expressed in the main clause both constituted one unit of analysis. The coding scheme we used was adapted from Linderholm & van den Broek (2002) and Kendeou & van den Broek (2007). While van den Broek and colleagues' coding scheme was not originally developed to assess myside bias, we selected it because it provides a comprehensive framework for analyzing cognitive processes during reading comprehension, particularly focusing on how readers make associations, explanations, and evaluations. The scheme's strength lies in its ability to capture both text-based processing and the integration of prior knowledge/beliefs—elements that are central to understanding myside bias. The main coding categories, along with their definitions, are described in Table 1 (supplementary data S1 provide all the coding categories, along with examples). One-third of the data underwent coding and checks by two coders—the second and third authors—as part of their training with an experienced coder, the first author. Twenty percent of the rest of the data were double-coded by two coders to assess inter-rater reliability. The inter-rater reliability, as measured by Cohen's Kappa (κ), was $\kappa = 0.849$, indicating a substantial level of agreement between the two coders. The rest of the data were coded by one coder, blind to participants' identity, time, and condition.

5. Results

We conducted linear mixed-effects models (LMMs) using the lmer() function from the lme4 package (Bates et al., 2015) in R (v4.2.1.; R Core Team 2020) to examine whether there were any differences in how participants responded to the two texts — and across time —from the initial to the final assessment — using the think-aloud data from the 30 participants at initial assessment and 24 participants at the final assessment. Random intercepts for Participants and School (categorized into three different schools) were incorporated into the random structure of the models. To account for potential covariate effects, we included [3] "refugee vs. non-refugee" as a covariate in all the models. No other covariate was added in the analysis. We chose to employ Linear Mixed-Effects Models (LMMs) rather than traditional ANOVA approaches, because traditional statistical approaches "are restricted to situations where data have been collected in a balanced fashion across the cells of the experimental design" (Meteyard & Davies, 2020, p. 6), whereas LMMs can handle unbalanced sample sizes such as ours between initial and final assessment. Additionally, the random effects structure in our models explicitly accounts for individual differences between participants (Meteyard & Davies, 2020) and research shows that "mixed effects analyses are more powerful than separate F1 and F2 analyses" and "better fit the data" (Brysbaert & Stevens, 2018, p. 16).

Participants' word counts on the think-aloud protocol when reading the "own-side" text ("own-side" text-protocol) ranged from 42 to 685 words ($M = 351$, $SD = 140.89$), and when reading the "the other-side" text ("other-side" text-protocol), word counts ranged from 80 to 691 words ($M = 341$, $SD = 139.22$). For the "own-side" text-protocol, participants' word counts during the pre-test assessment point ranged from 42 to 659 words ($M = 350.7$, $SD = 141.86$), and at the post-assessment point, word counts ranged from 149 to 685 words ($M = 351.4$, $SD =$

[3] having a refugee status as a result of the war that the think-aloud texts were about might be related with stronger emotions and beliefs against the "other-side" who is responsible for losing their houses and with participants' reasoning on the issue.

Table 1
Counts and Percentages for Think-Aloud Codes discussed in this paper.

Code	Definition	Own-side Text		Other-side Text	
		Pre (n = 30)	Post (n = 24)	Pre (n = 30)	Post (n = 24)
Association-relevant _ (AR)	They refer to concepts from background knowledge (which take the form of examples or visualizations) that were brought to mind by the text. These are relevant to the contents of the text.	50(6.57)	36(5.76)	22(3.23)	26(4.52)
Elaborative Inferences-Valid _(EIV)	These refer to cases when readers attempt to explain or comment on the contents of the current sentence on the basis of background knowledge. They are relevant to the text.	206(27.07)	168(26.88)	135(19.79)	136(23.65)
Elaborative Inferences-Invalid_(EII)	These refer to cases when readers attempt to explain or comment on the contents of the current sentence on the basis of background knowledge. They are not relevant to the text, the reader may have a misconception, made a mistake, or may have misread.	21(2.76)	20(3.2)	91(13.34)	47(8.17)
Opinion statements-	These are statements that clearly state the reader's opinion on what they have just read.	10(1.31)	4(0.64)	6(0.88)	3(0.52)
- **support-own-side**_(OS-SG)	- They support their own- Greek Cypriot- side.	3(0.39)	1(0.16)	7(1.03)	9(1.57)
- **support-other-side**_(OS- ST)	- They support the other–Turkish-Cypriot – side.	7(0.92)	7(1.12)	3(0.44)	7(1.22)
- **against-own-side**_(OS-AG)	- They are against the own–Greek-Cypriot- side	26(3.42)	33(5.28)	23(3.37)	25(4.35)
- **against-other-side**_(OS – AT)	- They are against the other-Turkish- Cypriot- side				
Consequences for present_(CFP)	This refers to cases where the reader makes a connection with what the text says and the consequences this has had to the present day.	40(5.26)	22(3.52)	5(0.73)	7(1.22)
Evaluative comments_(EC)	For something to be considered an evaluation, it should evaluate the specific act(ion)/ piece of information referred to in the text. Usually – if not always – an adjective is used.	49(6.44) 31(4.07)	59(9.44) 23(3.68)	26(3.81) 20(2.93)	31(5.39) 9(1.57)
- **Evaluative comments-Advanced**_(ECA)	- When the evaluation is accompanied by an elaborate justification.				

Note: A table with the counts and percentages for all the codes is provided in Supplementary Data (S2).

142.72). Participants' engagement did not differ significantly between the two texts ("own" vs "other") ($\beta = -9.08$, SE = 18.09, $t = -.50$, $p = .62$), and between the two assessment points ($\beta = -16.07$, SE = 18.81, $t = -.85$, $p = .40$). No significant interaction was found between the texts and assessment points ($\beta = -16.24$, SE = 36.17, $t = -.45$, $p = .65$).

Then, we conducted a series of generalized linear mixed-effects models (GLMMs) to examine the effects of Assessment Time (pre vs. post), Text ("own-side" vs. "other-side"), and their interaction on the count data for each code. These models were fit using the glmer() function. Only models for which convergence was achieved for the specified model structure were included in the analyses.

5.1. Reasoning when reading "own-side" vs. "other-side" texts

GLMM results comparing reasoning between reading "own-side" and "other-side" texts showed that participants used more valid elaborative inferences, relevant associations, statements referring to consequences for the present, and evaluative comments in the "own-side" text-protocol compared to the "other-side" text-protocol. In contrast, participants made more invalid elaborative inferences and more opinion statements supporting the other-side in the "other-side" compared to the "own-side" text-protocol (see Tables 1 and 2, and Fig. 1).

5.2. Reasoning at initial vs. final assessment

GLMM results comparing reasoning between the initial and final assessments showed that participants made more evaluative comments (EC) post-assessment compared to pre-assessment (see Table 2) across both texts.

5.3. Qualitative analysis

5.3.1. Reasoning at initial vs. final assessment

In reference to the finding that participants made more evaluative comments post-assessment compared to the pre-assessment time, a thematic analysis of these comments—conducted before and after the intervention, following the methodology outlined by Braun and Clarke (2006)—revealed that the main themes for which evaluations were offered were the same both pre- and post-intervention. These were: (1) the invasion by the Turkish military troops in 1974 and the subsequent occupation of around 37 % of the island; (2) the casualties that the Greek-Cypriot side suffered during the war, the missing people, and the refugees; (3) the act of war in general; and (4) the fact that Turkey violated the ceasefire order following the first invasion on July 14, 1974. These themes did not emerge from the pupils themselves, given that they referred to topics they had read on the Think-Aloud cards. What we are interested in here is the evaluation of those themes, which emerged from the students' responses to the cards. Given that the gist of the evaluations remained the same pre- and post-intervention—it was their quantity that increased—we discussed them together. [4]

To begin with, the Turkish invasion and occupation of part of Cyprus was characterized by the students as a *sad*, *unfair,* and *unrighteous* event (e.g. "It's unfair. Why would he[5] come here and do such a thing? It is not the case that Cyprus is his. It is ours" (MS079_pre_test)). Another main theme evaluated by the students was the casualties suffered by Greek-Cypriots, the fact that approximately 200,000 Greek-Cypriots became refugees, and the 1619 who went missing. Similar adjectives were used to refer to the human cost of the invasion, the main ones being *sad* and *unfair* (e.g., "I consider it a little sad because there's always another solution that is calmer than something else [i.e., warfare]" (MS043_post_test)). Finally, the students were critical of the fact that, right after the first invasion of July 14, 1974, Turkey violated the ceasefire order and kept occupying more areas of Cyprus. In both the pre- and post-intervention phases, they evaluated Turkey's actions as *unjust* and *unrighteous* and showed disapproval of them (e.g. "I don't like the fact that the Turks kept violating the ceasefire" (MS119_post_test)). Overall, the intervention seems to have helped students become more

[4] As noted elsewhere in the paper, more pupils (n = 6) participated at the pre-test phase than the post-test phase. However, this does not have an effect on the qualitative analysis pursued here given that we have checked the contributions of those six pupils at the pre-test phase and they do not affect the emergent themes in any way. In other words, the themes remain exactly the same with and without the contributions of those six pupils. Here we report the analysis with the whole sample.

[5] The pupil is referring to Mustafa Bülent Ecevit who was serving as the Prime Minister of Turkey at the time of the Turkish invasion.

Table 2
Linear Mixed-effects Models (GLMMs) Results examining the effects of Assessment Time (pre vs. post), Text ("own-side" vs. "other-side"), and their interaction on the count data for each code.

Predictors	Associations Relevant			Elaborative Inferences-Valid			Elaborative Inferences-Invalid		
	Incidence Rate Ratios	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*P*
(Intercept)	0.40	0.12–1.34	0.136	5.05	3.93–6.48	**<0.001**	0.80	0.36–1.78	0.583
Time: Post vs.Pre	1.06	0.74–1.52	0.752	1.11	0.94–1.30	0.224	0.85	0.59–1.23	0.383
Text:Other-side vs.Own side	0.54	0.38–0.77	**0.001**	0.74	0.64–0.87	**<0.001**	3.43	2.39–4.91	**<0.001**
Refugeedom	1.77	0.52–6.08	0.363	0.99	0.60–1.62	0.960	1.13	0.41–3.12	0.807
Time: Post vs.Pre* Text: Other-side vs.Own-side	1.52	0.76–3.04	0.241	1.26	0.92–1.72	0.149	0.65	0.32–1.33	0.240

Predictors	Consequences for Present			Disagreement			Evaluative Comments			Evaluative Comments-Advanced		
	Incidence Rate Ratios	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*
(Intercept)	0.39	0.24–0.62	**<0.001**	0.08	0.03–0.25	**<0.001**	0.74	0.44–1.25	0.260	0.49	0.18–1.32	0.156
Time: Post vs.Pre	1.17	0.61–2.22	0.641	1.47	0.58–3.71	0.413	1.49	1.06–2.09	**0.023**	0.92	0.56–1.51	0.738
Text:Other-side vs.Own-side	0.20	0.11–0.38	**<0.001**	1.79	0.73–4.36	0.200	0.54	0.39–0.75	**<0.001**	0.54	0.34–0.86	**0.009**
Refugeedom	0.88	0.41–1.89	0.738	1.18	0.25–5.52	0.829	1.98	0.75–5.23	0.168	1.14	0.47–2.78	0.776
Time: Post vs. Pre* Text: Other-side vs. Own-side	2.48	0.70–8.76	0.158	0.45	0.08–2.67	0.379	1.02	0.53–1.97	0.954	0.70	0.28–1.76	0.448

Predictors	OS_SG			OS_ST			OS_AG			OS_AT		
	Incidence Rate Ratios	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*	*Incidence Rate Ratios*	*CI*	*p*
(Intercept)	0.15	0.07–0.30	**<0.001**	0.06	0.02–0.22	**<0.001**	0.08	0.03–0.24	**<0.001**	0.57	0.28–1.15	0.115
Time: Post vs.Pre	0.54	0.22–1.36	0.191	1.06	0.29–3.82	0.930	1.81	0.76–4.33	0.181	1.39	0.94–2.05	0.102
Text:Other-side vs.Own-side	0.67	0.27–1.66	0.386	3.98	1.15–13.77	**0.029**	0.64	0.27–1.51	0.310	0.78	0.54–1.13	0.194
Refugeedom	1.56	0.54–4.46	0.411	0.52	0.10–2.61	0.427	1.68	0.37–7.67	0.505	0.84	0.30–2.38	0.747
Time:Post vs. Pre* Text: Other-side_vs_Own-side	1.25	0.21–7.61	0.809	2.91	0.24–34.84	0.400	2.24	0.40–12.42	0.355	0.85	0.40–1.80	0.670

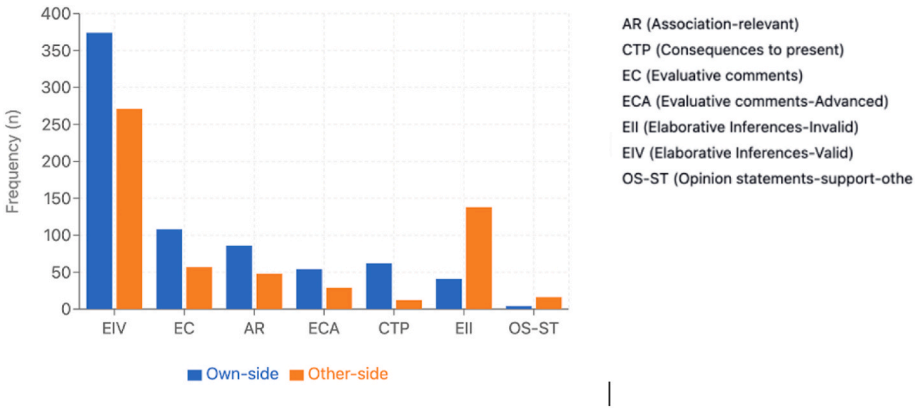

Fig. 1. Frequencies of think-aloud codes in own-side and other-side texts.

critical and provide more evaluations in their think-alouds during the post-intervention phase. Nevertheless, such evaluations were mainly critical of the other side in both the pre- and post-intervention assessment points.

5.4. Reasoning when reading "own-side" vs. "other-side" texts

As stated earlier, GLMM results showed that for the "own-side" text-protocol participants made more valid elaborative inferences, relevant associations, statements referring to consequences for the present, and (advanced) evaluative comments compared to the "other-side" text-protocol. In contrast, participants made more invalid elaborative inferences and more opinion statements supporting the other-side in the "other-side" compared to the "own-side" text-protocol (see Table 2 and Fig. 1). These findings come as no surprise, considering that the "own-side" text-protocol was more familiar to the students. The events of the Turkish invasion are discussed in Greek-Cypriot schools and sometimes at home with family members—this was confirmed in interviews we conducted with the elementary school teachers. Therefore, it is not surprising that the knowledge that the students had of the events and consequences of the invasion was reflected, for example, in the relevant associations they made in their responses to reading the flashcards from

the "own-side" text-protocol, as well as in the valid elaborative inferences they made. Examples are provided in the Appendix. The same applies to the statements referring to the consequences for the present, which focused on the consequences of the invasion, such as the fact that refugees cannot return to their homes, the need to show I.D. to visit the occupied side, and the division of Cyprus into two parts (see examples in the Supplementary data S1).

5.4.1. Opinion-based comments

The opinion-based comments expressed during the think-aloud process revealed participants' beliefs and myside bias. By comparing the expression of those beliefs across text protocols and over time, we gain important insights into myside bias and trends of change following engagement in the argument-based intervention.

Support "Own-Side." These statements (n = 23) focused on two main themes: (1) that the Greeks/Greek-Cypriots did everything in their power to protect Cyprus from the Turkish invasion (n=7), and (2) that the Greek-Cypriots never harmed the Turkish-Cypriots (n = 8) (e.g., "basically from what I heard and from what I know from history, we did not harm the Turkish-Cypriots" (MS009_pre_test)). Students made more statements supporting their own position when reading their "own-side" text at initial assessment than when reading the "other-side" text (10 vs 6). Notably, following their engagement in the intervention, the comments supporting their "own-side" decreased by half compared to those expressed before the intervention, in both text-protocols (from 10 to 4 and from 6 to 3). The statements made supporting their "own-side" indicate students' myside bias (when it comes to the second theme) and show that they were unaware of the intercommunal conflicts prior to 1974. In fact, part of the Greek-Cypriot discourse of events is that Greek-Cypriots and Turkish-Cypriots lived together peacefully before 1974. This is an instantiation of myside bias on the part of the Greek-Cypriot community and by no means a narrative shared by Turkish-Cypriots.

Against "Other-Side." Comments against the "Other side" were the most prevalent ones among opinion-based comments, in both text protocols (n = 107), and remained unchanged from pre-to post-test (see Table 1). This demonstrates students' myside bias, its robustness, and its resilience to change. These comments focused on two main themes: (1) that the military operation/invasion was a mistake, the Turks were wrong to cause so much suffering, and they were inconsiderate and devious (n = 79) (e.g. "Many died, and the Turks couldn't care less." (MS077_pre_test)); and (2) that the coup d' état was either used as just an excuse by the Turks, or even if they were justified in their claims to protect the Turkish-Cypriots, they should not have resorted to war (e.g. "That was merely the excuse to invade and conquer Cyprus for their own interests" (n = 28) (MS116_post_test)).

Against "Own-Side." The statements against the "own side" doubled in the post-test compared to the pre-test (from 3 to 7) when reading the "other-side" text, while they stayed the same when reading the "own-side" text. These comments (n = 24) centered on two main themes. The first theme was about the Greek-Cypriot side being unprepared for the Turkish invasion, and very disorganized (n = 9). The second, *more interesting theme*, focused on the fact that the Greek-Cypriot side was also to blame for what caused the invasion. Interestingly, the students seemed only to be aware of the role that the coup d' état played, and not of the events that took place ten years earlier (n = 15) (e.g. "My family and I come from Famagusta, and we are refugees, and they know that we are also to blame because we did the coup" (MS090_pre_test), "[…] things could turn out to be very different if we were a bit more considerate of the Turkish-Cypriots […]" (MS099_post_test)).

Support "Other-Side." Statements supporting the "other-side" were more prevalent when reading the "other-side" text (n = 16), compared to the "own-side" text (n = 4), a difference that was statistically significant. There was no notable change over time. They focused on the following two main themes: (1) how smart the Turks were in the way they conducted the invasion (e.g. "Turkey made a smart move invading so early in the morning." (n = 5) (MS077_pre_test)), and (2) that the Turks were right in wanting to protect the Turkish-Cypriots (n = 13) (e.g. "[…] in relation to what it says in the introduction, i.e., to stop the union of the island with Greece, this is very reasonable [support "other-side"] Why would Turkey want the Turkish-Cypriots and the Greek-Cypriots to form a union with Greece? [Rhetorical Question] That would mean that Greece would have more territory near Turkey and that would be a threat to Turkey." [Elaborative Inference-Valid] […] (MS099_post_test); "the most basic question is the following: they were right to come and protect their own [support "other-side"]; however, the question is why they are still here [against "other-side"]" (MS103_pre_test)). Note that in the second example above, the support-other-side statement is accompanied by a question introduced with "however," showing that we understand the reasons for the invasion—to protect Turkish-Cypriots at the time—but we don't understand why Turkish troops are still in Cyprus (50 years later). In what follows, we present data from two pupils who are examples of individuals who prior the intervention expressed no or very few opinion-reflective statements. After the intervention both pupils illustrated an ability not only to express their opinion but also to look at the issue at hand from both sides of the argument.

5.4.2. Case-study

To start with, we present Pupil MS006 whose think-aloud prior to the intervention did not involve any expression of opinion-reflective statements whatsoever. After the intervention, she seems to have developed not only in her ability to express her opinion, but also in her ability to look at both sides of the argument/problem. She produced opinion statements that were neutral in nature, as well as statements that were both in favor of and against the Turkish side, and statements that were against the Greek-(Cypriot) side. Her neutral statements conveyed the idea that we all ought to respect one another regardless of our ethnic and religious background. The pupil criticizes the Greek-Cypriots for not respecting the Turkish-Cypriots and for not understanding that they also have (human) rights. At the same time, she is critical of the actions of the Turks, wondering whether they truly thought through their actions and the ensuing consequences, and she condemns their decision to go to war (see Table 3). One might wonder whether the pupil's ability to express opinions that were supportive and critical of both sides is a continued reflection of her neutrality on the topic from the pretest phase. While this might be the case for this particular pupil, it is important to note that this is definitely not the case with a number of other pupils. In particular, there were five pupils who expressed opinion statements supporting the other side at posttest while only one of them expressed such opinions at pretest. Further, six pupils (three of them belong to the group of pupils mentioned above) expressed opinions against the Greek side at posttest phase while only one of them expressed such opinions at pretest. In other words, a total of 8 pupils show evidence that they have shifted from one-sided to two-sided reasoning after the intervention.

Pupil MS131 is an example of a participant who only expressed one opinion statement prior to the intervention; an opinion which was against the Turkish side. After the intervention, her think aloud included six opinion statements. This on its own shows that this pupil, too, developed in her ability to express her opinion. At the same time, she also shows evidence of being able after the intervention to look at both sides of the argument/problem. This does not necessarily mean that the pupil is no longer biased in favor of the narrative of the community she is part of. This is evident if one looks at the number of opinion statements made in favor of the Greek side (2), against the Turkish side (3) and in favor of the Turkish side (1). However, the intervention did help her look at both sides of the argument as well as to be better able to form and express her opinion. Overall, the pupil is of the opinion that Greeks were not much of a threat to Turkish Cypriots, and that Turkey used that argument as an excuse to invade Cyprus even though – as she acknowledges – they might also truly believed that Turkish Cypriots were in danger and they actually came to rescue them. Table 3 presents examples of opinion statements expressed in the think aloud protocols of

Table 3
Examples of opinion statements in MS006 and MS131 think-alouds.

MS006
(1) The Turks now also have a point; they want us to respect the Turkish-Cypriots [support 'other-side'] but we don't seem to understand this because they went to war with us—we are not friends with that country and we consider Turkish-Cypriots to be the same as them [i.e., the Turks]. [against 'own-side'] They are just humans [which happen to come] from two countries[61] and they have rights. [support 'other-side']
(2) The Turks wouldn't listen, and they would just go on [with the war]. [Paraphrase] If they truly just wanted for the Turkish Cypriots' rights to be respected, they would have stopped the war, end the dispute, so that everyone would live in peace, but they didn't. [against 'other-side'] And that was not righteous. [Evaluative Comment]
MS131
(3) I am thinking that he might have had a reason to do it: to protect the Turkish Cypriots [Paraphrase]. That's why I believe he did it [support 'other-side']
(4) I feel sad that he had to make the invasion because of that; I think he wanted to maintain security and peace for the Turkish Cypriots, [paraphrase] but I think it was also an excuse to invade Cyprus [against 'other-side'] because we did not threaten the Turkish Cypriots that much [support 'own side'].
(5) Um, I think it was an excuse to invade Cyprus and overtake it [against 'other-side'] and I don't think the Turkish Cypriots were so threatened, let's say [support 'own side'].
(6)And they had found an excuse to invade, so that they can support their side. [against 'other-side']

both MS006 and MS131.

6. Discussion

This study aimed to examine individuals' reasoning, particularly myside bias, on a local historical controversial event following engagement in extensive dialogic argumentation on a non-historical topic. Before the intervention, students responded differently when reading the two historical accounts. Also, they engaged in more valid elaborative inferences, relevant associations, statements referring to consequences for the present, and evaluative comments when reading the "own-side" text compared to the "other-side" text. In contrast, students made more invalid inferences and more opinion statements supporting the "other-side" when reading the "other-side" compared to the "own-side" text. Our findings of engagement in different reasoning when reading the "own-side" vs the "other-side" texts, are in line with the findings of Iordanou et al. (2020) who examined an adult sample of the same population. The fact that members of a younger generation, whose views are not based on direct experience with the historical event but on formal education and narratives from in-group members, exhibited myside bias related to ethnic prejudice, as members of an older generation did, supports the view that myside bias is the product of social learning (Stanovich, 2023), transmitted from one generation to the next.

We now turn to the question of how elementary school students reason about a controversial historical event following engagement in extensive dialogic argumentation on a non-historical topic, focusing particularly on myside bias. Our findings reveal nuanced patterns in students' reasoning processes. Students demonstrated more evaluative comments in the post-assessment phase compared to the pre-assessment phase, suggesting enhanced critical and evaluative thinking after engaging in extensive dialogic argumentation; however, their judgments still favored their own position, expressing agreement with their "own-side" and being judgmental of the "other-side." In the study by Iordanou et al. (2020), engagement in such evaluative processing, which the researchers called "low epistemic processing," was confined to those individuals who exhibited mature epistemic thinking. The fact that young adolescents who participated in the intervention showed a change in their reasoning from the initial to the final assessment—in the direction of the performance exhibited by an adult group with a more mature epistemic perspective —suggests promising potential for this approach in promoting students' reasoning skills. Specifically, adolescents in the present study had a mean score of $M = 1.29$ for engaging in evaluative processing while reading the "other-side" text, compared to $M = 0.22$ for adults in Iordanou et al. (2020). Our qualitative analysis of think-aloud comments also provided some illuminating insights into how individuals progressed over time. After their engagement in the argument-based intervention, students showed evidence of being more reflective about their own position—there was a decrease in the comments supporting their own-side and an increase in the comments against their own-side.

Still, students largely made only partial progress in their reasoning, engaging in more evaluation, though it was not objective. Their evaluative comments were still in favor of their own position, showing how resilient myside bias is to change. This finding is in line with other findings in the literature showing that even university faculties, despite having advanced education, cannot free themselves from myside bias (Stanovich & Toplak, 2023). We choose topics for the intervention in which the participants were likely to show limited affective engagement, given empirical evidence suggesting that high negative affect toward a topic is not conducive to effective thinking (Maier et al., 2018; Mason et al., 2018), to maximize the chances of seeing improvements in reasoning, which, once developed, we hypothesized would transfer to a more personal topic. Our hypothesis was partially confirmed. The findings show that some transfer took place, but not fully in terms of approaching an issue in a balanced way. These findings are in line with the findings of Udell (2007), who showed that the transfer of gains from non-personal to personal issues is challenging. Our findings are also consistent with the literature showing that myside bias is very resilient and content-specific (Stanovich, 2023). Importantly though, the think-aloud methodology provided insights regarding the conditions that facilitate the identification of myside bias and possible ways to address it, namely being exposed to the "other-side," a topic we turn to next.

The elementary school students who participated in our study exhibited significantly more opinion-based statements that supported the "other-side" when reading the other-side's account than when reading their "own-side" 's account. Being exposed to the narrative of the "other-side," as authentically expressed by its representatives, appears to be a facilitative condition for understanding the "other-side" and showing empathy toward the "other-side." Interestingly, these students appeared to engage in reflection on their own position when reading the "other-side" 's account: the think-aloud comments against the "own-side" doubled, while statements supporting their "own-side" decreased by half in the final assessment compared to the initial assessment. These findings suggest that to be able to reflect on your own position and see possible weaknesses, engagement with an alternative position is crucial. This finding is in line with the findings of Iordanou and Kuhn (2020), who showed that hearing arguments favoring the opposing position, expressed by individuals known to hold this position, can be beneficial. This finding aligns with recent research findings and recommendations for direct or indirect engagement with alternative interpretations when teaching history (De La Paz & Felton, 2010; Wansink et al., 2018). This work extends existing research, showing that even engagement with an alternative position through a text, written by individuals who hold this position, could be beneficial in evoking a better understanding of the other position and self-reflection of one's own position.

Needless to say, this study has its own limitations. A major challenge in studying my-side bias is distinguishing whether it arises from participants' inherent preference for one side of an argument or from their greater familiarity and knowledge of that side. In our study, this appears

to be the case, as students were naturally more familiar with the Greek-Cypriot narrative. As a result, it is unclear whether their reasoning reflects 'genuine' bias or simply limited exposure to alternative perspectives coupled with a deeper understanding of their own side. This raises an important consideration for future research in this area: reasoning based on existing knowledge, especially when one lacks familiarity with opposing narratives, may not necessarily indicate bias but rather a reliance on what is most accessible to them cognitively. Furthermore, it is perhaps unrealistic to expect students to reason entirely detached from their ethnic and social identities, as these elements are integral to their lived experiences and perspectives. Additionally, the absence of a control group limits our ability to make definitive causal claims about the observed improvements in reasoning following the intervention. Regarding the unbalanced sample sizes across time, while we employed Linear Mixed-Effects Models to appropriately address this issue, it may still affect the power and generalizability of our findings.

Given these complexities, our study's conclusions must be approached with caution, particularly in light of its methodological limitations. These include the absence of a control group, a small sample size, and the use of the same texts in pre- and posttests, all of which may have influenced the findings. To address these issues, future research could employ larger and more diverse participant samples and design tasks that better differentiate between bias and knowledge-based reasoning. Incorporating control groups would shed more light on the study's findings. Passive control groups (engaging in business as usual but receiving the same texts and assessment schedule as the experimental group) and active control groups (participating in specific intervention components, such as dialogic argumentation without reflection or reading the QA cards without argumentation or reflection) would help determine which individual components of the argument-based intervention drive the observed reasoning gains. Additionally, different texts can be used in future research for pre- and post-assessments, with texts counterbalanced across participants (i.e., Text A used as pre-test for half the participants and post-test for the other half) to rule out the possibility of learning effects from repeated text exposure.

In conclusion, the present exploratory study provides evidence showing that the think-aloud method is a promising approach for offering novel methodological and epistemological contributions to research on myside bias. An important finding, that the think-aloud has revealed in the present study, is the role of engaging with the other-side, being exposed to the narratives and arguments from those who believe them. This finding has important teaching and learning implications, because engagement with original material that reflects the perspectives of the other side is crucial to cultivate multiperspectivity and empathy; such skills are important in history education to facilitate dialogue between antagonistic memory communities (Psaltis et al., 2017). As revealed by the think-aloud, engaging with the other-side can serve as a valuable pedagogical method in history teaching to achieve (a) a multiperspectival understanding of the past, present, and future of one's own national group, and (b) an empathetic understanding of the other-side.

[6] The student has a misconception about who the Turkish-Cypriots (TC) are. That the pupils do not know who the TC are was also confirmed in interviews we had with them—which are not discussed in this paper—and was also evident to us during the intervention. For many students, TC are Turks that come from Turkey and have either chosen to live in Cyprus or have one parent that is Greek-Cypriot. This view was also documented in an ethnographic study conducted in 1996 with Greek-Cypriot children (Spyrou, 2006). As Spyrou commented, the children were confused when they were asked who TC were; they "reinterpreted the category 'Turkish-Cypriots' in a way that made sense to [them] and which fit into [their] lack of more precise knowledge" (p. 129).

CRediT authorship contribution statement

Kalypso Iordanou: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization. **Constantina Fotiou:** Writing – review & editing, Formal analysis, Data curation. **Athina Manoli:** Writing – review & editing, Formal analysis, Data curation. **Michalinos Zembylas:** Writing – review & editing, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization.

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Appendix A. Supplementary data

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Data availability

Data will be made available on request.

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