Measuring epistemological beliefs in history education

An exploration of naïve and nuanced beliefs

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Measuring epistemological beliefs in history education: An exploration of naïve and nuanced beliefs

Gerhard Stoel[a,*], Albert Logtenberg[b], Bjorn Wansink[c], Tim Huijgen[d], Carla van Boxtel[a], Jannet van Drie[a]

[a] University of Amsterdam, Netherlands
[b] Leiden University, Netherlands
[c] Utrecht University, Netherlands
[d] University of Groningen, Netherlands

A B S T R A C T

This study investigates a questionnaire that measures epistemological beliefs in history. Participants were 922 exam students. A basic division between naïve and nuanced ideas underpins the questionnaire. However, results show this division oversimplifies the underlying structure. Exploratory factor analysis extracted 5 factors, separating items connected to nature of knowledge from nature of knowing. Furthermore, EFA problematized the distinction between naïve and nuanced ideas on subjectivity. Experts also reported large variance on subjectivity; therefore, these items were excluded from the questionnaire. The final questionnaire contained 3 factors focusing on the objective nature of (1) historical knowledge and (2) historical knowing, and on (3) methodological criteria. Finally, differences between school tracks and relationships between epistemological beliefs, interest and history grade were explored.

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1. Introduction

Over the last two decades, the importance of developing students' epistemological understanding of history as a disciplinary form of knowledge, with specific procedures for ascertaining the validity of historical claims, has gained more attention in Western history education (Bertram, 2012; Clark, 2009; Davies, 2011; van Drie and van Boxtel, 2008; VanSledright, 2011; Wineburg, 2001). An emphasis on what we call "interpretational history" is now visible in the educational curricula of many countries including Australia, Canada, Germany, the Netherlands, the UK, and the US (Erdmann & Hassberg, 2011). In the discourse on epistemological beliefs, more naïve beliefs often correspond with a knower assuming a passive role and perceiving the past as fixed, or a knower assuming an active (yet uncritical) role and regarding historical interpretations as mere opinions. More sophisticated epistemological beliefs correspond with a knower acknowledging multiple interpretations of the past but simultaneous appreciating the disciplinary criteria needed to evaluate historical accounts (Davies, 2011; Seixas, 2004). Students who hold these sophisticated beliefs are, in the words of Kuhn, Cheney, and Weinstock (2000, p. 310), able to "coordinate the objective and subjective dimensions of knowing and knowledge".

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* Corresponding author.
  E-mail address: g.l.stoel@uva.nl (G. Stoel).

Several studies have focused on epistemological beliefs in history (e.g., Buehl & Alexander, 2001; Lee & Shemilt, 2003; Maggioni, 2010; O'Neill, Guloy, & Sensoy, 2014). These studies built on general models for conceptualizing (progression of) epistemological beliefs and developed domain-specific frameworks and instruments for history education. To date, however, studies that developed paper-and-pencil tests to measure students' epistemological beliefs in history are scarce, limited to small sample sizes, and have only been conducted within a North American context (VanSledright & Maggioni, 2016). The most well-known study that developed a quantitative instrument to assess epistemological beliefs in history primarily focused on history teachers (Maggioni, VanSledright, & Alexander, 2009). Operationalizing and measuring students' and teachers' epistemological beliefs in history has proven to be difficult, leaving issues such as the validity of the instruments open to debate. One core problem has been whether ideas about the (un)certainty of historical knowledge and ideas about the sources and criteria of historical knowing should be operationalized as coherent "stances" or whether they should be regarded as separate, independent dimensions. Another problem concerns interpreting the value students attribute to subjective ideas—do these ideas always represent naïve epistemological beliefs or can they also be reflective of more nuanced epistemological beliefs?

We sought to develop and test a questionnaire that measures the epistemological beliefs of history students enrolled in one of the two highest educational tracks in the Dutch secondary school system. Students from both tracks were in their final year of secondary education (10th and 11th grade) and were preparing for their central exams. The developed instrument is underpinned by a division of beliefs between naïve and nuanced ideas. Ideas about the subjective nature of history are divided between both naïve and nuanced levels. To test the validity of the questionnaire, we conducted an exploratory factor analysis (EFA), looked at the consistency of expert scores, analyzed the differences between school tracks (and between students and experts), and explored the relationships between students' epistemological beliefs, their interest and their history grade. Apart from the scientific relevance, we also aimed to develop an instrument that can practically assist teachers in assessing and supporting the development of their students' epistemological beliefs about history.

1.1. Theoretical framework

1.1.1. History and epistemology

Imagine a history teacher who tries to explain the causes of World War I. After giving students the opportunity to discuss different causes with each other, the teacher models the idea that there can be multiple causes and many "right answers" and that this is dependent on the chosen perspective of the researcher. After the lesson, however, several students still express the need to know the right answer about the exact causes of World War I. This example highlights the challenge of teaching interpretational history in the classroom. When teachers design lessons to emphasize the fact that historical knowledge is interpretative and dependent on a chosen perspective, they often experience that students' beliefs are quite resistant to change and that they demonstrate a strong desire for fixed, factual knowledge about the past (Wansink, Akkerman, & Wubbels, 2016).

In line with our example, researchers in history education assume that naïve epistemological beliefs influence or even hinder a students' ability in or disposition towards historical thinking (e.g., Lee & Shemilt, 2003). Moreover, research across different subjects has shown that epistemological beliefs influence students' task motivation and academic performance (e.g., Alexander, 2005; Buehl & Alexander, 2001). Students should come to realize that historical knowledge changes—not necessarily because prior understandings were wrong (although this too could be the case) but because of the different perspectives people hold and the different questions people and societies ask at different points in time (Seixas, 2004). Furthermore, students should grasp the notion that historical claims cannot be "proved" by conducting an experiment. This notion makes the domain fundamentally interpretative and ill-structured (cf. Goldman et al., 2016). At the same time, however, the construction of historical accounts is confined by specific heuristics and a focus on evidence-based argumentation in the construction of historical accounts (Wineburg, 2001), or stated more simply—by a domain-specific method.

Epistemological beliefs are not only regarded as an important prerequisite of sophisticated historical thinking. Students with more sophisticated epistemological beliefs are also assumed to be better equipped to participate in a pluralistic, democratic society because those beliefs can help them to develop mature ideas about why multiple accounts or perspectives about the same event can coexist (Barton & Levstik, 2004; Straaten, Wilschut, & Oostdam, 2015; Stradling, 2003). Research has shown that representations of the past can influence how people live their present lives and interpret conflicts (Kolikant & Pollack, 2009). Therefore, developing nuanced epistemological beliefs seems important not only for learning history but also for becoming a critical democratic citizen.

1.1.2. Conceptualizing epistemological beliefs in history

Educational researchers have been interested in epistemological beliefs since the 1970s, if not earlier (e.g., Perry, 1970). Focal points of this research have been questions pertaining to how to model these beliefs, how epistemological beliefs develop with age, and how these ideas influence learning, thinking, and performance on academic tasks (Buehl & Alexander, 2001; Hofer & Pintrich, 1997). Two generic models in particular have strongly influenced the conceptualization of epistemological beliefs in history—the three-stage reflective judgment model (King & Kitchener, 1994, 2002) and the four-stage model of epistemological understanding (Kuhn & Weinstock, 2002; Kuhn, 1991). These models were both based on interviews with people from multiple age groups, focusing on tasks that elicit problem solving and critical reasoning.

In history, students' epistemological beliefs have been primarily studied with regard to thinking about historical sources (Lee & Ashby, 2000; Seixas, 2004; Shemilt, 1987; Wineburg, 2001). Of great influence has been the progression model described by Lee and Shemilt (2003), which is based on a large set of interview data with secondary school students, in different age groups, engaged in historical problem-solving tasks. Detailed analysis of these interviews led Lee and Shemilt to define six stages in the progression of students' conceptualization of historical evidence. Although the generic and domain-specific models are derived from different datasets, they show considerable conceptual overlap, which enhances their validity.

Maggioni et al. compared and combined these different models into a three-stage model of the development of epistemological ideas in history (Maggioni, Alexander, & VanSledright, 2004; Maggioni et al., 2009). On the basis of this synthesis, Maggioni developed the Beliefs about History Questionnaire (BHQ) to assess students' beliefs about history. In Maggioni's model students moved from a copier stance, to a subjectivist stance, and finally to a criterialist stance. Below, we briefly elaborate on the conceptual beliefs of students in these three stages.

Students often start history education with a concept of historical knowledge as a fixed and singular copy of the past. Furthermore, these students believe that historical sources yield direct and unproblematic information about the past. The only relevant question in students' minds is whether the information in the sources is correct or incorrect. Students also understand historical reasoning procedures as a fixed set of procedures that allow them to sift out bias and lies in sources, to establish the facts, and to arrive at a "copy" of the past. These beliefs often emphasize the role of expert historians who transmit the past because they are the ones with the expertise to separate correct and incorrect information.

At a certain point, however, students might begin to understand that multiple accounts always coexist in history and that historical knowledge is never fixed. As a consequence, these students might surrender to the idea that historical knowledge is ultimately subjective. History, then, becomes a matter of opinion and historical-thinking procedures lose their relevance. These students might come to understand historical sources as products of human communication and therefore, as intrinsically subjective. Because the past is gone, this subjectivity cannot be "escaped." Students in this phase tend to overemphasize the role of the knower (the subject) as the source of knowledge.

A level of epistemological nuance is reached when students start conceptualizing historical knowledge as interpretative judgments "that can be evaluated and compared according to criteria of argument and evidence" (Kuhn et al., 2000; p. 311). These students understand that multiple perspectives on the past are possible but also know that the validity of these perspectives should be judged according to disciplinary criteria such as evidence and argument. These students regard history as a discipline and think of themselves as active agents in the construction of (their personal) historical understanding. Their questions and understandings turn historical artifacts into evidence. Furthermore, these students understand that sources can only be interpreted in the historical context from which they emanated. Thus, a focus on strategies and methods of historical reasoning ensues in order to arrive at valid claims or to assess accounts written by others. The objective and subjective dimensions of history become coordinated (e.g., Lee & Shemilt, 2003; Wineburg 1991, 1998).

At the core of the models describing epistemological ideas lies a distinction between beliefs people hold about (1) the nature of knowledge and (2) the nature of knowing (Hofer & Pintrich, 1997). Beliefs about the nature of knowledge focus on the (un)certainty of (historical) knowledge, ranging from knowledge being fixed (i.e., objective truth) to knowledge being a mere subjective and uncertain construct. Beliefs about the nature of knowing focus on the sources of knowledge (i.e., knowledge as directly transmitted from external sources or experts versus knowledge as a human "personal" construct) and on the value attributed to methodological criteria or the justification of knowledge (Buehl & Alexander, 2001; King & Kitchener, 1994; Kuhn, 1991).

1.1.3. Assessing epistemological beliefs in history

Much research on epistemological beliefs was conducted using qualitative approaches such as interviews (e.g., King & Kitchener, 1994; Kuhn, 1991; Lee & Shemilt, 2003; Perry, 1970). From the 1990s onwards, scholars have also aimed to design paper-and-pencil instruments that allowed for a large scale quantitative approach. At first these questionnaires mainly focused on generic epistemological beliefs (e.g., Schommer, 1990; Schraw, Bendixen, & Dunkle, 2002; Wood & Kardash, 2002). Since the beginning of this century, however, we also see a shift towards the development of domain-specific instruments. Within history education, only a few quantitative instruments designed to assess epistemological beliefs have been developed (Buehl, Alexander, & Murphy, 2002; Maggioni et al., 2004, 2009; O'Neill et al., 2014; Reisman, 2012).

An important point of discussion in the design of these instruments has been the extent to which coherence should be expected to exist between the ideas about the nature of knowledge and the nature of knowing. In other words, should a questionnaire be designed to classify students within one of three or four stages (or stances) by combining items about certainty of knowledge and sources of knowledge that are conceptually linked? Or should the development of students' ideas be modeled in a more multidimensional way, with scales that exist more or less independent from one another? This second conception might be more adaptive to assess differences between domains, topics, and contexts (Schommer & Walker, 1995). A notable example of the first approach is the BHQ (Maggioni, 2010), in which items are designed to belong to a specific stance, and students are expected to follow a stage-like trajectory. A well-known example of the second approach is the Epistemological Questionnaire developed by Schommer (1990). This test comprised several dimensions (e.g., structure, certainty, and sources of knowledge) on which students could hold a position ranging from naïve to more nuanced.

The BHQ has become a well-known instrument in research focusing on epistemological beliefs in history education. This questionnaire, aimed at secondary school students, is an adaptation (Maggioni, 2010) of the original questionnaire designed to assess elementary school teachers' (epistemological) beliefs about the learning and teaching of history (Maggioni et al., 2004, 2009). However, although the instrument is well grounded and validated, several difficulties arise when analyzing the results. For instance, results showed that categorizing respondents within one of the three stages proved difficult. Furthermore, changes in item responses between the pre- and posttest often appeared to be quite random (Maggioni et al., 2004). This epistemological "wobbling" was also found in other research focusing on prospective and practicing history teachers (cf. VanSledright & Reddy, 2014).

Several studies employing the BHQ found that a two-factor structure (instead of a three-factor solution) best fit the data (e.g. Maggioni, 2010; Mierwald, Seiffert, Lehmann, & Brauch, 2016; Stoel, Van Drie, & Van Boxtel, 2015). In particular, the study of Mierwald et al. with 124 German high school students suggested a solution that combined objectivist (copier) and subjectivist ideas in one factor and criterialist ideas in a second. They concluded that a distinction between naïve and developed (or nuanced) ideas might be more in line with students' responses. These findings concur with the results found by Maggioni (2010). In her study with students, objectivist and (several) subjectivist items together constituted what appeared to measure a "naïve" factor.

In our own experiences with the BHQ, one of the problems has been the interpretation of subjectivist items, especially when assessing the development of student thinking (Stoel, Van Drie, & Van Boxtel, 2016). The model underlying the questionnaire suggests that a more critical stance towards these items represents more nuanced epistemological thinking. However, in our own research we found that students who received a lesson unit focusing on the interpretative nature of historical explanations reported a higher value on subjectivism at posttest. In our understanding, acknowledging the subjective character of historical knowledge can both reflect naïve beliefs (i.e., history as opinion) but also more nuanced beliefs (i.e., historical knowledge as interpretative and constructed). The fact that subjectivity is not necessarily a negative position is, for example, pointed out by Wansink et al. (2016, p. 94) who concludes that an official goal of Dutch history education is to "develop the insight that historical narratives are subjective interpretations, made in their own cultural contexts" (cf. Board of Examinations, 2013).

1.2. The present study

Our goal in this study was to test an alternative questionnaire that would address the abovementioned problems and allow teachers and researchers to assess students' epistemological beliefs in history. The basic distinction underlying our questionnaire was between items addressing naïve ideas and items addressing more nuanced epistemological understanding. During item design, we worked from the assumption that subjectivist items, like those included in the BHQ, could be divided between items measuring naïve epistemological beliefs but also items measuring more nuanced beliefs. In line with influential (generic and domain-specific) models, we developed items that focused on beliefs about the nature of historical knowledge, as well as on beliefs about the nature of historical knowing. The model of Kuhn et al. (2000) and the framework of Maggioni et al. (2009) informed the qualitative distinctions between naïve and nuanced beliefs on both dimensions.

Data were collected from 922 exam students enrolled in one of the two highest educational tracks in the Netherlands. Seven experts in the field of history and the philosophy of history also completed the questionnaire. Our main research question is as follows: Does our questionnaire confirm a theoretical model in which epistemological beliefs in history are primarily divided between naïve epistemological beliefs and nuanced epistemological beliefs? We investigated the following subquestions in order to evaluate the quality of the questionnaire and the underlying model:

- Does the questionnaire adequately measure naïve versus nuanced beliefs about the nature of historical knowledge and the nature of historical knowing?
- Do results found with experts in the field of history and historical philosophy confirm the consistency of the naïve and nuanced scales?
- Do preuniversity (PU) students and students from higher general continued education (HG) score differently on the naïve and nuanced scales?
- What is the relationship between students' epistemological beliefs (naïve vs. nuanced) and their interest in history and history grade?

1.3. Hypotheses

Hypothesis 1a. We expect a two-factor solution dividing naïve epistemological ideas and nuanced epistemological ideas to fit the data.

Hypothesis 1b. We expect items focusing on the subjective nature of historical knowledge to be conceptually divided between the naïve factor and the nuanced factor.

Hypothesis 2. We expect experts to critically value items related to naïve beliefs and positively value items related to nuanced beliefs.

Hypothesis 3. Compared to HG students, we expect PU students on average to be more critical towards naïve beliefs and more in agreement with nuanced beliefs.

Hypothesis 4. We expect naïve epistemological ideas to negatively correlate with students' interest and their history grade and nuanced epistemological beliefs to positively correlate with students' interest and their history grade.

2. Method

2.1. Participants

Data on the questionnaire were collected in an online survey, which was initiated by the national institute for curriculum development in the Netherlands (SLO) on the initiative of the coordinator for history education. The questionnaire was part of a larger survey intended to measure students' interest in history and the value they attributed to specific aspects of the Dutch history curriculum. Students completed the questionnaire in Spring 2015. Participants of the survey were 922 students in their final year of upper secondary education, preparing for their central examination. Students originated from 16 schools located in different areas of the Netherlands (394 men, 526 women). Students were enrolled in the two highest educational tracks: higher general continued education (HG; n = 556, mean age 17), preparing for a university of applied sciences, and preuniversity education (PU; n = 366, mean age 18), preparing for a (research) university. In the Netherlands, HG education takes 5 years to complete (7th to 11th grade), whereas PU education takes 6 years (7th to 12th grade). Therefore, PU students were, on average, 1 year older and had received an additional year of formal history education (an extra study load of 160 h).

The questionnaire was also completed by seven experts in the field of history and the philosophy of history. The three experts in the field of philosophy of history were tenured academics working at three different universities in the Netherlands. The historical researchers were two tenured academics, one lecturer, and one PhD-student, working at the University of Amsterdam in the departments of History and European Studies. The sample was drawn from the authors' networks.

2.2. Structure of the instrument and item development

The theoretical underpinnings to the questionnaire as well as initial items were defined in a two-day session in Spring 2015, in which the first four authors of this paper took part. All researchers are academic historians, experienced history teacher educators, and researchers in history education. Their studies include both qualitative and quantitative research on history students' or teachers' epistemological beliefs and students' historical thinking and reasoning (e.g. Huijgen, Van Boxtel, Van de Grift, & Holthuis, 2014; Logtenberg, Boxtel, & Hout-Wolters, 2010; Stoel et al., 2016; Wansink, Akkerman, Vermunt, Haenen, & Wubbels, 2015).

The key distinction underlying the questionnaire was the distinction between naïve epistemological ideas (i.e., ideas students should become more critical towards when developing their beliefs) and nuanced ideas (i.e., ideas students should develop greater agreement with). Items were designed to assess beliefs about the nature of knowledge in addition to beliefs about the nature of knowing. In our model, naïve beliefs were connected to both objectivist (copier) ideas (e.g., "all history professors will probably give the same answers to questions about the past" and "it is not possible to write about history when sources contradict each other") and naïve subjectivist thinking (e.g., "historical accounts are largely opinions of historians" and "because the past is gone, you cannot adequately assess the reliability of historical accounts"). Nuanced beliefs were connected to more constructive ideas about the subjective aspects of history (e.g., "new explanations for historical events will always be written" and "in history your own interpretation is very important") and items emphasizing the importance of disciplinary criteria and methods (e.g., "in history there are various methods to assess the reliability of historical accounts" and "in history education you must learn to deal with conflicting evidence"). Table 1 characterizes the differences between the two levels of epistemological understanding.

We conducted a small pilot study to detect potential pitfalls and ambiguities in the wording of the items. Three students (two women, one man) in their final year of secondary school (mean age 17) completed the questionnaire while thinking aloud. The session was recorded, and based on this pilot several items were rephrased to improve clarity.

Our resulting questionnaire consisted of 26 items that were expected to load onto one of two factors. The naïve scale consisted of 15 items, and the nuanced scale consisted of 11 items. All items were scored on a 6-point Likert scale, ranging from 0 (*completely disagree*) to 6 (*completely agree*). The items for the questionnaire were partly based on the Dutch translation of the BHQ (Maggioni, et al. 2009; Stoel et al., 2015). Items 4, 6, 7, 11, 14, 16, and 22 closely resembled items from the original BHQ, whereas items 2, 10, 12, 19, and 20 were loosely based on BHQ items. Items 18 and 21 were based on the questionnaire developed by Buehl (2003).

Table 1
Levels of Naïve and Nuanced Epistemological Understanding (Based on Kuhn et al., 2000; Maggioni et al., 2004, 2009).

Level:	Characterization of beliefs:	Examples of items:
Naïve	**Objectivist ideas on history** – Knowledge is fixed and singular – Claims are copies of the past or factual statements – Knowledge is embedded in the sources **Subjectivist ideas on history** – Knowledge is uncertain and personal – Claims are opinions – Knowledge is generated by human minds	8. Historians will give roughly the same explanation for an event, if they study the same sources 9. Connections between causes and an historical event are fixed 3. When two eyewitnesses make the same claim about an historical event, you know it is true 17. It is not possible to write about history when sources contradict each other 7. Historical accounts are mainly opinions 10. Because the past is gone, you cannot adequately assess the reliability of historical accounts 12. Historical accounts are largely opinions of historians
Nuanced	**Criterialist ideas on history** – Knowledge is generated by human minds and uncertain, but also bound by: – Disciplinary methods and criteria of evidence and argument – Claims are judgments	13. New explanations for historical events will always be written 14. In history your own interpretation is very important 26. For many events, historians will continue to debate the causes 2. In history there are various methods to assess the reliability of historical accounts 6. In history education it is important that you learn to support your reasoning with evidence

2.3. Individual interest and history grade

Individual interest was measured with an 8-item questionnaire. Students scored items on a 6-point Likert scale, ranging from 0 (*strongly disagree*) to 6 (*strongly agree*). The questionnaire was based on an adaptation of the task-value scales from the Motivated Strategies for Learning Questionnaire (MSLQ) developed for mathematics education (Linnenbrink-Garcia et al., 2010; Pintrich, Smith, García, & McKeachie, 1993). Sample items included "I enjoy the school subject of history," "I can use historical knowledge well outside school," and "it is important for me to be able to think historically." Cronbach's alpha for the questionnaire was 0.93 ($N = 922$).

Students' history grades were measured by students' mean grade for their school exams. In the Netherlands, this grade is based on students' results in the final 2 years of their study, and it often comprises different kinds of work (historical reasoning and knowledge).

2.4. Data analysis procedure

We inspected the dataset with 922 respondents for missing values. This analysis showed that on average 2.3% of the values were missing. Missing value count on the individual variables ranged between 16 and 29 per variable ($M = 21$, $Mdn = 21$, $Mode = 19$). We counted 13 nonrespondents and six respondents with more than four missing values.

Data analysis consisted of several steps. First, we performed an EFA in R using lavaan package (semTools library). SemTools allows users to conduct an EFA using full information maximum likelihood (FIML). This approach to handle missing data uses all available information in the dataset to estimate the missing values (Little, Jorgensen, Lang, & Moore, 2014). In our EFA, we used a maximum likelihood estimation with oblimin rotation to interpret the factors because we expected the scales to correlate.

In the next step, we compared the found factor solution with the experts' scores on the underlying variables in order to explore whether the factors were in agreement with the experts' thinking.

Subsequently, we imported the dataset into SPSS and compared the mean scores on the factors for the two school levels. To handle missing data in SPSS we used multiple imputation (MI; $n_{imputed} = 20$) to create a pooled data set. Both the FIML and MI arrive at similar results (Collins, Schafer, & Kam, 2001). On the pooled dataset we conducted t tests to explore the differences between the students in HG education and students in PU education. The mean scores of the students were also compared to the experts' mean scores.

On the basis of these analyses, choices were made about which factors to retain. Finally, we explored the correlations between the three epistemological scales and investigated the relationship between the epistemological scales, students' history grades, and their interest in history.

3. Results

3.1. The instruments' dimensionality and reliability

We designed our questionnaire based on a two-factor model discerning naïve and nuanced ideas. In the first analysis conducted in R, we extracted seven factors. We inspected the rotated solution and removed three items with loadings below 0.3 (Items 1, 13, and 23). The same was done for two items that loaded above 0.3 on more than one factor (Items 11 and 25). Table 2 lists these items under the header "removed". In the final result, five factors emerged that could be interpreted (see Table 2). Although the factor analysis in general did not confirm a simple split between naïve and nuanced beliefs, each factor (except Factor 4) could be categorized as naïve or nuanced. Results broke down along the two dimensions, the nature of knowledge and the nature of knowing. Within the nature-of-knowing dimension, two factors were identified that could be divided between naïve and nuanced. Within the nature-of-knowledge dimension, we identified three factors that appeared more in line with Maggioni et al.'s (2004,2009) division between objectivist, naïve subjectivist, and nuanced subjectivist ideas. However, the distinction between naïve and nuanced subjectivist items was "fuzzy". Hereunder, we will briefly discuss the factors.

Factor 1 consisted of six items that all related to the importance of methodological criteria for constructing historical accounts. We called this factor *nature of knowing–nuanced (criteria)*. Factor 2 consisted of five items that centered around the impossibility of generating reliable historical accounts because the past is gone and therefore claims cannot be tested. Students valuing these items appeared to believe that history does not boast any methods to help them cope with contradictory sources. The unavailability of the past can only be solved if sources tell an unbiased truth. We called this factor *nature of knowing–naïve (objective)*. Item 19 also loaded onto this factor, but the item was designed to measure a nuanced

Table 2
Standardized Rotated Factor Loadings.

	Factor				
	1	2	3	4	5
Nature of knowing–nuanced (criteria)					
5. History is an appropriate subject to develop inquiry skills	**0.76**[*]				
6. In history education it is important that you learn to support your reasoning with evidence	**0.73**[*]				
4. In history you must learn to deal with conflicting evidence	**0.54**[*]				0.16[*]
22. History is a critical inquiry about the past	**0.52**[*]				0.17[*]
15. A good historical account discusses multiple perspectives on the past	**0.42**[*]				0.29[*]
2. In history there are various methods to assess the reliability of historical accounts	**0.41**[*]			−0.12[*]	0.23[*]
Nature of knowing–naive (objective)					
17. It is not possible to write adequately about history when sources contradict each other		**0.67**[*]			
16. When eyewitnesses do not agree with each other, it is impossible to know what happened	0.16	**0.62**[*]			
19. You can never know for certain what happened in the past.		**0.42**[*]	−0.14[*]	0.16[*]	0.23[*]
10. Because the past is gone you cannot adequately assess the reliability of historical accounts	−0.17[*]	**0.38**[*]		0.29[*]	0.16[*]
20. You can only write adequately about history if the evidence is complete		**0.37**[*]	0.20[*]		0.19[*]
Nature of knowledge–objective					
9. Connections between causes and an historical event are fixed.			**0.59**[*]		
21. When something is written in your history textbook, you can be nearly certain that it is true.			**0.46**[*]		
3. when two eyewitnesses make the same claim about an historical event, you know it is true.			**0.45**[*]		
8. Historians will give roughly the same explanation for an event, if they study the same sources.			**0.44**[*]	0.13[*]	
18. All history professors will probably give the same answers to questions about the past.			**0.38**[*]		−0.10
Nature of knowledge–subjective					
12. Historical accounts are largely opinions of historians.				**0.72**[*]	
7. Historical accounts are mainly opinions.				**0.63**[*]	
14. In history your own interpretation is very important.	0.28[*]		0.12	**0.33**[*]	0.14[*]
Nature of knowledge–uncertain					
26. For many events, historians will continue to debate the causes.					**0.63**[*]
24. Even when studying the same sources historians often arrive at different explanations.					**0.53**[*]
Removed					
1. The goal of historical inquiry is to create a copy of the past.					
11. When investigating sources it is important to check author perspective.					
13. New explanations for historical events will always be written.					
23. When there are two different stories about the past, only one can be correct.					
25. In a thorough, historical inquiry, the amount of causes for an event will become clear.					
Cronbach's α	0.79	0.66	0.60	0.52	0.54

Note: Extraction Method: Maximum Likelihood. Rotation Method: Oblimin Rotation. Loadings less than 0.1 in absolute value are excluded from the table.

belief—the fact that in history certainty is ultimately unattainable. It appears that for students reliability and certainty are synonymous.

Factor 3 consisted of items that related to the certainty and singularity of historical knowledge. We called this factor *nature of knowledge–objective.* Factors 4 and 5 both focused on the subjectivity of historical knowledge. These factors showed that the distinction made between a view of historical knowledge as opinion (naïve) and interpretation (nuanced) was not cleanly reproduced in the data. Factor 4 related to naïve subjectivist beliefs about historical knowledge as opinion. We called this factor *nature of knowledge–subjective.* However, one item intended to measure more nuanced ideas about subjectivity also loaded onto this factor (Item 14 "in history your own interpretation is very important"). Factor 5 contained only two items that related to more nuanced beliefs about the uncertainty of historical knowledge and to the fact that perspectives on the past are ever changing. We called this factor *nature of knowledge–uncertain.* Two items (14, 19) from the original questionnaire intended to assess these ideas loaded on other factors and one item (13) did not load at all.

Reliability analysis on the five factors showed that Cronbach's alpha was good for Factor 1 (.79), questionable for Factors 2 (.66) and 3 (.60), and poor for Factors 4 (.52) and 5 (.54).

3.2. Stability and consistency of expert scores

We collected experts' data (*n* = 7) to evaluate the stability of the items (see Table 3) and the consistency of the scales. As expected, items belonging to Factor 1—nature of knowing–nuanced (criteria); Items 5 to 15—consistently received high values from the experts. Items belonging to Factor 2—nature of knowing–naïve (objective); Items 17 to 20—were generally rejected by the experts. This was in line with our expectations. The only exception was Item 19, "you can never know for certain what happened in the past," which was answered favorably by all experts except for one who reported a limited disagreement. In line with the original intention, the experts tended to interpret Item 19 as measuring a nuanced belief. With students, however, Item 19 appeared to conceptually shift from nuanced to naïve; therefore, we decided to remove it from the questionnaire.

As expected, items belonging to Factor 3—nature of knowledge–objective; Items 9 to 18—were generally rejected by the experts. Within Factor 4—nature of knowledge–subjective; Items 12 to 14—expert answers showed more variance. Some experts strongly rejected the idea that historical knowledge is mere opinion or mainly interpretation; whereas others, who potentially reasoned from a more postmodern paradigm, tended to be partially in agreement with these items. In line with the factor analysis, experts did not clearly differentiate between historical accounts as opinions and interpretation. Factor 5

Table 3
Expert Scores (N = 7).

	Experts						
	1	2	3	4	5	6	7
Nature of knowing–nuanced (criteria)							
5. History is an appropriate subject to develop inquiry skills	5	4	4	6	4	6	5
6. In history education it is important that you learn to support your reasoning with evidence	5	5	5	5	6	6	6
22. History is a critical inquiry about the past	5	4	2	6	4	6	5
4. In history you must learn to deal with conflicting evidence	5	5	6	5	5	6	6
2. In history there are various methods to assess the reliability of historical accounts	6	5	5	5	6	5	5
15. A good historical account discusses multiple perspectives on the past	6	5	6	6	5	6	4
Nature of knowing–naïve (objective)							
17. It is not possible to write adequately about history when sources contradict each other	4	1	1	2	2	1	2
16. When eyewitnesses do not agree with each other, it is impossible to know what happened	5	2	2	4	2	2	2
19. You can never know for certain what happened in the past (rejected)	5	4	4	6	5	4	3
10. Because the past is gone you cannot adequately assess the reliability of historical accounts	5	1	2	5	4	2	1
20. You can only write adequately about history if the evidence is complete	2	1	1	1	1	2	2
Nature of knowledge–objective							
9. Connections between causes and an historical event are fixed.	2	3	n.a.	3	1	2	3
21. When something is written in your history textbook, you can be nearly certain that it is true.	2	3	1	4	1	1	2
3. when two eyewitnesses make the same claim about an historical event, you know it is true.	2	1	4	2	2	1	1
8. Historians will give roughly the same explanation for an event, if they study the same sources.	3	3	2	2	6	1	2
18. All history professors will probably give the same answers to questions about the past.	1	2	1	2	1	1	2
Nature of knowledge–subjective							
12. Historical accounts are largely opinions of historians.	5	1	1	4	2	2	4
7. Historical accounts are mainly opinions.	5	1	1	2	2	2	4
14. In history your own interpretation is very important.	5	2	3	5	5	6	5
Nature of knowledge–uncertain							
26. For many events, historians will continue to debate the causes.	3	3	5	5	6	6	6
24. Even when studying the same sources historians often arrive at different explanations.	5	4	5	5	6	6	4

was formed by two items that represented nuanced beliefs about the nature of knowledge-uncertain. As expected, experts were generally in agreement on this factor.

3.3. Differences between educational tracks

To investigate the sensitivity of the factors underlying the questionnaire, we explored the differences in epistemological beliefs between the two educational tracks and the differences between student and expert scores. We expected that, compared to students in HG education, PU students would be in greater agreement with factors representing nuanced epistemological ideas and in greater disagreement with factors representing naïve ideas. This expectation was based on the fact that, on average, PU students are one year older than HG students. Furthermore, their education prepares PU students for academic study. Table 4 presents the descriptive statistics per factor (split for the educational track), the results of the t tests between both groups, and the experts' mean scores.

In Factor 1, nature of knowing–nuanced (criteria), we found a difference between both educational tracks. As we expected, PU students valued these items significantly higher than HG students. In general, all participants (including the experts) reported positive scores on these items. In line with our expectations, expert scores were on average 0.5 points higher than student scores.

In Factor 2, nature of knowing–naïve (objective), we found a difference between both educational tracks. As we expected, PU students were significantly more critical towards these items than HG students. Strikingly, student scores from both tracks differed strongly from expert scores (by almost 1.5 points). The mean score of the students from both tracks indicate a limited agreement, but experts clearly rejected these items. This result suggests that Factor 2 represents a real difference between student and expert thinking, which was in line with our expectations.

In Factor 3, nature of knowledge–objective, we found a difference between both educational tracks. As we expected, PU students were significantly more critical towards these items than HG students. In this factor, we also found a large difference (over 1 point) between experts and students. Students' mean scores were between limited disagreement and neutral, whereas experts strongly rejected these items. This result suggests that Factor 3 represents a real difference between students and experts, which was in line with our expectations.

In Factor 4, nature of knowledge–subjective, we found no significant difference between educational tracks. Furthermore, we found only a small difference between students and experts (around 0.2). The variation (standard deviation) between experts was large. Above all, the results from both groups did not show a clear direction (expert mean scores ranged from 1.33 to 5.00). These results strengthened the idea that this factor did not yield reliable information because a desired outcome cannot be defined. Furthermore, Factor 4 appeared to be insensitive to change

In Factor 5, nature of knowledge–uncertain, we found a significant difference between both educational tracks. The direction of the expert scores was also more coherent. However, as with Factor 1, the difference between students and experts was not large (around 0.5).

3.4. Towards an appropriate model

Based on these results, we decided to include the first three factors in our final model. The expert scores led us to conclude that Factor 4 (relating to the subjectivity of historical knowledge) was intrinsically unstable; therefore, the question about what development on this scale would mean could not be answered. Furthermore, no differences were found between the educational tracks on this scale. The factor also had a poor alpha.

Table 4
Descriptive Statistics, Between Group t Tests, and Expert Scores (Pooled Across Imputations).

	Track[a]	n	M	SE	t	P	Experts			
							M	SD	Min	Max
Knowing–nuanced (criteria)	HG	556	4.52	0.029	4.10	<0.000	5.17	0.43	4.67	5.83
	PU	366	4.71	0.033						
Knowing–naïve (objective)	HG	556	3.90	0.033	−3.47	0.001	2.21	0.97	1.25	4.00
	PU	366	3.73	0.035						
Knowledge–objective	HG	556	3.33	0.030	−6.10	<0.000	2.23	0.49	1.25	2.75
	PU	366	3.04	0.036						
Knowledge–subjective	HG	556	3.31	0.035	1.55	0.121	3.19	1.33	1.33	5.00
	PU	366	3.39	0.040						
Knowledge–uncertain	HG	556	4.38	0.034	3.08	0.002	4.93	0.93	3.50	6.00
	PU	366	4.53	0.036						

[a] HG = Higher General Continued Education (10th grade); PU = Preuniversity Education (11th grade).

In Factor 5 (relating to the constructed nature of knowledge), expert answers showed greater consistency and direction (answers ranged from 3.5 to 6). However, this factor consisted only of two items, and the differences between experts and students were small. Although, we could attempt to enlarge this factor by generating new items, we found it telling that two items originally intended to measure nuanced beliefs about knowledge (i.e., Item 19 "you can never know for certain what happened in the past" and Item 14 "in history your own interpretation is very important") loaded onto other factors and that one item (i.e., "new explanations for historical events will always be written") did not load at all. We concluded that the difference between naïve and nuanced ideas about the subjective (or constructed) nature of historical knowledge would probably remain intrinsically fuzzy. Therefore, we also excluded Factor 5.

In the final model, Cronbach's α was 0.79 for Factor 1, nature of knowing–nuanced (criteria); 0.66 for Factor 2, nature of knowing–naïve (objective); and 0.60 for Factor 3, nature of knowledge-objective. Table 5 shows the factor loading of these 15 items.

3.5. Relationships between epistemological scales and students' grade and their interest in history

Research has shown that a relationship exists between students' epistemological ideas, their interest, and their academic achievement (e.g., Alexander, 2005; Buehl & Alexander, 2001). This relationship is often also assumed in history. In this section, we discuss the correlations between the constructs. We also explore the correlations between the three definitive scales of the questionnaire: knowing–nuanced (criteria), knowing–naïve (objective), and knowledge–objective. To interpret Pearson's r, we used Cohen's guidelines (Cohen, 1988). As a consequence, we interpreted correlations weaker than 0.20 as having "no to negligible relationships" even when they were statistically significant (Table 6).

We found a weak correlation (Pearson's $r = 0.24$) between students' scores on the knowledge–objective scale and their scores on the knowing–naïve (objective) scale. Students who agreed that historical knowledge is fixed also agreed more with the idea that history can only be written if the sources do not contradict each other (and might be regarded as objectively true).

We found a weak positive correlation (Pearson's $r = 0.20$) between students' history grade and the value they attributed to ideas about the nature of knowing–nuanced (criteria). Students who regarded history as a subject that requires disciplinary reasoning tended to be higher academic achievers.

We found a moderate positive correlation (Pearson's $r = 0.35$) between students' interest in history and the value they attributed to ideas about the nature of knowing–nuanced (criteria). Students who regarded history as a subject that requires disciplinary reasoning also tended to report a greater interest in history. Finally, a moderate positive relationship (Pearson's $r = 0.38$) was found between students' history grade and their level of interest.

The positive relationships between students' history grade, their level of interest, and their beliefs about the importance of critical, disciplinary reasoning were all in line with our expectations. Contrary to our expectations, the correlations between students' history grade, their level of interest, and both factors related to objective ideas about knowledge and knowing were negligible. However, the directions of these correlations were theoretically consistent (all negative).

Table 5
Standardized Rotated Factor Loadings.

	Factor		
	1	2	3
Nature of knowing–nuanced (criteria)			
6. In history education it is important that you learn to support your reasoning with evidence	**0.71**[*]		
5. History is an appropriate subject to develop inquiry skills	**0.69**[*]		
4. In history you must learn to deal with conflicting evidence	**0.63**[*]		
22. History is a critical inquiry about the past	**0.60**[*]		
2. In history there are various methods to assess the reliability of historical accounts	**0.56**[*]		
15. A good historical account discusses multiple perspectives on the past	**0.54**[*]	0.10	−0.11
Nature of knowing–naïve (objective)			
17. It is not possible to write adequately about history when sources contradict each other	−0.11	**0.69**[*]	
16. When eyewitnesses do not agree with each other, it is impossible to know what happened	0.12	**0.67**[*]	
10. Because the past is gone you cannot adequately assess the reliability of historical accounts	−0.12	**0.42**[*]	
20. You can only write adequately about history if the evidence is complete	0.13	**0.33**[*]	0.19[*]
Nature of knowledge–objective			
9. Connections between causes and an historical event are fixed.			**0.61**[*]
21. When something is written in your history textbook, you can be nearly certain that it is true.			**0.47**[*]
18. All history professors will probably give the same answers to questions about the past.	−0.10		**0.43**[*]
3. When two eyewitnesses make the same claim about an historical event, you know it is true.	−0.11		**0.43**[*]
8. Historians will give roughly the same explanation for an event if they study the same sources.		0.13[*]	**0.43**[*]
Cronbach's α	0.79	0.66	0.60

Note: Extraction Method: Maximum Likelihood. Rotation Method: Oblimin Rotation. Loadings less than 0.1 in absolute value are excluded from the table.

Table 6
Correlations Between Epistemological Beliefs, History Grade, and Interest.

	n	1	2	3	4	5
1. Knowing–nuanced (criteria)	922	–				
2. Knowing–naïve (objective)	922	−0.04	–			
3. Knowledge–naïve (objective)	922	−0.13[a]	0.24[a]	–		
4. Individual interest	922	0.35[a]	−0.17[a]	−0.10[a]	–	
5. History grade	922	0.20[a]	−0.14[a]	−0.15[a]	0.38[a]	–

[a] Correlation is significant at the 0.01 level (2 tailed).

4. Conclusion and discussion

We designed our study to explore an alternative framework for measuring epistemological beliefs in history. While acknowledging the distinction between items measuring the nature of knowledge and the nature of knowing, we tested an approach where items were primarily divided between naïve ideas and nuanced ideas. One of the assumptions underlying our questionnaire was that ideas about the subjective and uncertain nature of historical knowledge could represent naïve as well as more nuanced ideas about history.

The main question of our study was as follows: do the results of our questionnaire confirm a theoretical model in which epistemological beliefs in history are primarily divided between naïve epistemological beliefs and nuanced epistemological beliefs? A first conclusion to draw from this study is that, as in previous studies, measuring epistemological beliefs (in history) remains a complex challenge that resembles, in the words of Peter Novick, "nailing jelly to the wall" (Novick, 1988). On the whole, a two-factor division between naïve and nuanced ideas was not confirmed. The factor analysis broke down into five separate factors that could be interpreted against the background of naïve and nuanced ideas, which partly confirmed Hypothesis 1a.

On the naïve level, ideas about the objective nature of knowing (knowing–naïve (objective); i.e., the idea that sources can be true or untrue, that historians are trained to select these true sources, and that "true" sources provide objective information that mirror the past) were separated from ideas about the objective nature of knowledge (knowledge–objective; i.e., the idea all history professors will give similar answers to questions about the past). This finding is in line with general frameworks of epistemological beliefs (King & Kitchener, 1994; Kuhn & Weinstock, 2002; Kuhn, 1991). Strikingly, within the group of experts, items belonging to these two factors appeared to be answered as one factor—both were strongly rejected. This finding might resemble a finding by Barzilai and Weinstock (2015) that ideas about the objectivity of knowledge and knowing constitute two different things for students in earlier stages of expertise, whereas these ideas become integrated in expert thinking. A quantitative follow-up study with master's students in history might further explore potential shifts in the factor structure on different levels of expertise.

Striking in the dataset was the mean score ($M = 3.77$) that students reported on the items relating to the nature of knowing–naïve (objective). Students tended to be in limited agreement with the fact that incomplete or contradictory sources render engaging in history difficult. On the contrary, experts strongly objected to these items. This finding with exam students contrasts with the official goal of the history curriculum in the Netherlands, which states that students should come to understand history as an interpretative science. However, the result is in line with other research that demonstrates that students often regard historical knowledge as fixed and equate history with the past (e.g., Lee & Ashby, 2000; Paxton, 1999). Although students' ideas tended towards naivety, the difference between experts and students also indicated that this scale might be informative and sensitive to change.

Factor 4 centered around ideas about the subjectivity of historical knowledge and yielded a diffuse result. Items loading onto this factor were originally designed to assess naïve beliefs, such as regarding historical knowledge as opinion, as well as more nuanced beliefs, such as regarding historical knowledge as interpretative. Contrary to Hypothesis 2, experts also did not differentiate clearly between these items. In fact, experts' answers varied strongly, ranging from "strongly reject" to "accept," and no significant differences were found between students from the two educational levels or between students and experts. Therefore, we concluded that ideas about the subjectivity of history could not be properly calibrated and that a conceptual division between naïve and nuanced subjective ideas was not confirmed (Hypothesis 1b). This finding is supported by earlier studies. For instance, our own study in which we used the BHQ (Maggioni, 2010) showed that students developed a greater understanding of subjectivism (and simultaneously of criterialism) after participating in a lesson unit that focused on constructing and comparing (different) explanations for the outbreak of World War I (Stoel et al., 2016). However, the theoretical underpinnings of the BHQ associated a more positive value of subjectivism with more naïve epistemological beliefs.. In practice, Mierwald et al. (2016) found in a comparison between beginning and advanced students training as history teachers that there was no significant difference on subjectivism. In contrast, Mierwald et al. did find a large difference in the rejection of objectivism between both groups ($d = 0.91$). With subjectivist items it appears that both rejection and agreement can represent nuanced (or naïve) thinking.

On the nuanced level, the factor analysis separated items that focused on the historical method from a small factor of two items that focused on historical knowledge being temporary and uncertain. We excluded this nature-of-knowledge–uncertain factor from our final model because of the limited number of items and because other items from this cluster failed

to load or loaded onto another factor. The factor focusing on methodological criteria to construct historical knowledge consisted of six items and had good psychometric characteristics (i.e., strong factor loadings and a high Cronbach's alpha).

Based on the model underpinning the questionnaire, we initially labeled this factor nature of knowing–nuanced (criteria) (Factor 1). However, what puzzled us was that students could simultaneously report a positive score for both the naïve and the nuanced nature-of-knowing items. A closer look at the items in Factor 1 and a renewed consultation of the literature led to the hypothesis that these items perhaps should not be conceptualized as addressing nuanced ideas about the nature of knowing, but as addressing a separate dimension focusing on *historical methodology* for generating historical knowledge. In their model on levels of epistemological understanding, Kuhn et al. (2000) also specified this dimension and labeled it *critical thinking*. This dimension is characterized by the value attributed to procedures (strategic knowledge) to interpret sources and construct reliable claims.

Redefining this factor *historical methodology* makes it possible to interpret a response where a student agrees with both objective factors (the nature of knowledge and the nature of knowing) as well as with the critical-thinking factor. Students who answer in this manner might value historical-thinking skills because they believe that these skills make it possible to separate true and false sources and could generate true and fixed knowledge. We might label these students *procedural objectivists* (cf. Kuhn et al., 2000). Apart from allowing us to understand a position that seemed illogical at first, redefining this factor may also assist us in separating naïve subjectivists from more nuanced thinkers. Namely, it is not so much their ideas about knowledge and knowing that change when a student moves from naïve subjectivism to more nuanced beliefs but the value they place on methodology.

The factor measuring *historical methodology* yielded a high mean score ($M = 4.61$). Students tended to be in clear agreement with these items. Experts on average were even more positive towards these items, but the difference was only 0.5. Although the psychometric quality of this factor was high, it might be that this scale is less sensitive to change. With the current data, this conclusion cannot be substantiated because this result might also reflect the relatively strong emphasis on historical reasoning skills (methodological criteria) in the Dutch curriculum. Broadening the research to include a larger age and ability group and to include students from different countries is a necessary step to further explore this idea.

Significant differences between students from both educational tracks were found for the three remaining factors, but the differences were small. Students on the PU track were generally more critical towards objectivist items and valued academic criteria for constructing historical accounts higher than HG students. These results are in line with our expectations (Hypothesis 3) and enhance the validity of the questionnaire. The results also lend partial support to Hypothesis 4. The scale that assessed historical methodology was positively correlated with students' interest and their grades, whereas both objective factors yielded an expected, yet negligible, negative correlation with both students' interest and their grades. More research is needed to explore differences between other age groups (e.g., younger students and first- or second-year university students).

In conclusion, our study shows that items connected to objectivism and subjectivism measure different constructs and cannot be combined into one naïve factor. However, results from previous studies focusing on secondary-school students sometimes found these items to load together (Maggioni, 2010; Mierwald et al., 2016). Although it is possible to interpret a student who rejects both types of naïve beliefs (the basis on which the questionnaire was designed), it would indeed be more difficult to explain positive scores on both types of items.

We found that items measuring (naïve and nuanced) subjectivism yielded several problems. It was difficult to separate naïve from more nuanced ideas, and experts varied strongly on these items—possibly as a result of real differences in philosophical thought about the nature of history. As a result, we could not calibrate the outcomes on this factor. A solution might be to interpret a rejection of items focusing on the objectivity of historical knowledge and knowing as an indication of more subjective beliefs; although, such an approach does not differentiate between naïve and nuanced subjectivist ideas. This difficulty of disentangling naïve subjectivism from more productive ideas about the interpretative nature of historical knowledge might be solved by adding a separate dimension, focusing on the value and knowledge of methodological criteria. We might, therefore, hypothesize that developing epistemological understanding in history might be assessed by the degree to which participants agree with items measuring the role of disciplinary procedures in combination with the degree to which participants' reject objectivism both on the dimension of knowledge and on the dimension of knowing.

One of our goals was to develop a tool that can inform classroom practice. The Dutch history curriculum places a strong emphasis on historical reasoning skills, as witnessed by the high mean score on items measuring students' value and understanding of methodological criteria. In contrast, the understanding of the nature of historical knowledge and the sources of this knowledge at the end of secondary schooling reflects a more naïve position. It might be that, although students acquire domain-specific procedures and *do* a lot of history in school, their understanding of the status of historical accounts and of the sources of historical knowledge is challenged less often. Many students appear to end up in a position of procedural objectivism. Or, in the words of Kuhn et al. (2000, p. 310), at the end of secondary schooling, students are still unable to "coordinate the objective and subjective dimensions of knowing and knowledge".

An important implication for (Dutch) history education might be to put greater emphasis on the epistemological dimension of historical inquiry and to develop pedagogies that incorporate classroom reflectionon the nature and sources of historical knowledge; i.e. teaching history (explicitly) as an open-ended and interpretative subject. This study, in line with earlier studies with the BHQ (Stoel et al., 2015, 2016), shows that students who regard history as a subject of inquiry and who value historical methodology (criteria) also report a higher interest in history and, to a lesser extent, achieve higher grades.

Future research should focus on collecting cross-sectional data from different age groups and educational levels to explore the development of student thinking within the Dutch history curriculum. Secondly, we started our study from the premise that a questionnaire developed in a North American context might not be directly transferable to a Dutch (or European) context. For instance, connotations connected to subjectivism might differ between cultural contexts. In our final questionnaire, the scales assessing subjectivism were excluded from the instrument. It would be interesting to see how robust the current questionnaire would be in diverse cultural contexts and different history curricula.

A further step in our effort will be to improve the stability of the existing items and generate new items that could indicate objectivist ideas in order to increase reliability of the two scales. Small-scale thinking aloud sessions with students from different age groups and educational levels might enhance the clarity of the items and broaden the employability of the questionnaire. Together with experts, it would also be interesting to revisit and discuss the content validity of the current questionnaire, especially with regard to the conceptualization of subjectivity. To what extent does a rejection of items related to objectivity indeed indicate a move towards more subjective or interpretative beliefs? The outcome might be a renewed effort to redesign subjectivity as an independent factor. If subjectivism is reconceptualized as an independent scale, future research should address the question what development on this scale would look like and focus on developing clear and unambiguous items, by conducting thinking-aloud studies.

A final point of discussion concerns the methodological paradigm we used to measure epistemological beliefs about history. Our study builds on a line of research that has aimed to develop an epistemological beliefs questionnaire for history education with relatively abstract, closed-ended items that do not provide concrete historical context (e.g. Buehl & Alexander, 2001; Maggioni et al., 2004, 2009). Other researchers have emphasized the importance of historical context to elicit epistemological ideas. For instance, Barzilai and Weinstock (2015) developed a questionnaire that introduced a scenario-based history approach in which students responded to multiple statements (e.g., related to the sources, the nature of knowledge, and the certainty of knowledge). A third approach has focused on epistemic thinking as "cognition in action." These studies investigated how (naïve or nuanced) epistemological beliefs influence students' task performance and self-regulated learning processes—for instance through hypertext logging and thinking aloud. These online methods showed how nuanced epistemological beliefs positively impacted students' self-regulated learning processes, but only when working on complex, higher-order tasks (Pieschl, Stahl, & Bromme, 2013).

We acknowledge the limitations of our method, but also maintain that it adds to other more sophisticated approaches. In this, we adhere to VanSledright and Maggioni who state in their review study of epistemic cognition in history, "noting epistemic cognition-in-action is only part of the story. Researching the beliefs that underpin those acts seems to be another crucial part if educators have any hope of cultivating understandings that allow history to be accomplished (2016, p. 129)." The benefit of our approach is that it allows for a large-scale comparison between groups and that it can be easily used as a diagnostic tool in classroom practice. Another important benefit is that it explicates ideas that are often missing in history classrooms. It is these ideas that teachers can subsequently reflect on with students within concrete contexts and tasks to foster more nuanced thinking. Because of the elusive nature of epistemological beliefs and the very real impact on students learning behavior, multiple approaches should go hand-in-hand. Future studies should focus on triangulating the results we found with different instruments.

Acknowledgments

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