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EDUCATIONAL PSYCHOLOGY & COUNSELLING | RESEARCH ARTICLE

Power relations in educational scientific communication—a critical analysis of discourse on learning styles

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Abstract: Learning styles theory has been fiercely criticized, however, many educationalists continue to use learning style typologies. This study gives an argument as to why a hermeneutical perspective in the learning styles debate is needed. A critical discourse analysis (CDA) is presented on four critical texts that aim to discourage the use of learning styles for educational purposes. Therefore, three steps are taken: (1) textual analysis involving argumentation style, with the focus on epistemology and discursive practices, (2) processing analysis involving interpretation, and (3) social analysis, relating the results to power structures in education. CDA demonstrates how the discourse on learning styles, as seen in these texts, results in unbalanced relationships between educational researchers and their readership. Discourse, as analyzed in these texts, leaves little space for professional decision-making. Researchers impose themselves as experts to be trusted. A more appropriate articulation of the discourse on learning styles could help reduce misunderstandings in the field of learning styles.

Subjects: Social Sciences; Teaching & Learning - Education; Theories of Learning

Keywords: Learning styles; power relations; scientific communication; hermeneutics

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1. Introduction

1.1. The learning styles debate

What conclusions could one draw from the ongoing learning styles debate? Over the past decades, a variety of typologies have been proposed, which theorize on students' learning styles. They all

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ABOUT THE AUTHORS

Both authors are researchers and teacher educators in Belgium. The present study is part of a doctoral thesis of the first author under the supervision of the second author. The general interest that inspires this study is the ambitious challenge for teachers to respond to diversity in the class. The thesis intends to facilitate teachers to realize the concept of differentiated instruction in their teaching. While intending to practice differentiated instruction, many teachers refer to scientific and non-scientific discourse on learning styles. By systematically and critically analyzing the discourse on learning styles, the aim of this study is to reframe the vigorous learning styles debate.

PUBLIC INTEREST STATEMENT

What conclusions could teachers draw from the learning styles' debate? Many scholars are critical about the use of the concept of learning styles for education. They are often considered to be "myths" that need to be busted. Instead of discussing the utility of learning styles as such, this article studies the way scholars intend to persuade their readership from their point of view on this matter. It is demonstrated how scholars not only rely on rational arguments to contest learning styles. Claims are also based on scholars' supposed expertise or reinforced through non-rational elements. This illustrates the unequivocal relationship between scholars and their readership. We argue why sustainable teachers' professional development needs a more equivocal relationship between authors and readers.

categorize student learning along different typologies. Learning styles can provide teachers with more insight regarding student diversity and they are often intended to impact instructional design (Felder & Brent, 2005). Coffield, Learning Centre, Moseley, Hall, and Ecclestone (2004) identified 13 major types of learning style. A large number of these typologies are non-scientific, but also scientific research has led to a diverse set of typologies and strategies. Some of the high impact studies (Felder & Brent, 2005; Felder & Spurlin, 2005; Kolb & Kolb, 2005; Newble & Entwistle, 1986; Vermunt, 1996) reached both a broad scientific public and a large number of practitioners. The rationale behind the apparent popularity of the topic lies in the intuitively appealing character of the idea that relates student diversity to student learning. Popularity is even said to be culturally rooted in European individualism (Scott, 2010).

The theory on learning styles has been fiercely criticized and the validity of the typologies has been questioned (Willingham, Hughes, & Dobolyi, 2015). Other teacher's actions are said to be more effective (Hattie, 2009). Moreover, the idea that instruction should be tailored to student learning styles has been contested, as proof of the effectivity of such tailored instruction is lacking (Pashler, McDaniel, Rohrer, & Bjork, 2008). Although not all typologies have been criticized equally, issues of methodology have been debated among researchers arguing for evidence-based educational practice (Kirschner & van Merrienboer, 2013; Rohrer & Pashler, 2012).

The most important argument of learning styles adversaries is the lack of validity of the concept. Kirschner (2017) suggested there were problems with internal consistency of learning styles typologies, also referring to failing construct validity and predictive validity of several typologies. This lack of scientific legitimacy is critical toward the use of learning styles as an analytical category or as a basis for tailored instruction. In Belgium (Flanders), this criticism against learning styles has become common sense among scholars and teacher educators. They systematically warn against the use of them, or argue for caution. Notwithstanding the criticism of learning styles, many educationalists continue to use learning styles theory (Newton, 2015). It seems as if the learning style debate does not generate the desired progress and that misunderstandings persist. As for many educational topics, the gap between adepts and adversaries appears to be large on this matter. In this article, we argue that a new perspective in the learning styles debate is needed in order to make forward steps in this debate. A critical analysis of the discourse on learning styles may help in understanding why so many practitioners stay reluctant to accept the conclusions of critical scholars. Moreover, it is our belief that a more thoughtful articulation of the discourse on learning styles, based on a more equivocal relation with the desired readership, would enable progress in the learning styles debate.

1.2. Deconstructing regimes of truth

The French philosopher, Foucault, questioned the relationship between theory building and practice. In his view, knowledge, including scientific knowledge, may not be seen as a distinct category of thought standing outside reality, rather, it always relates to society (Foucault, 1991; Usher & Edwards, 1994). He suggested that "regimes of truth" were circular patterns in which knowledge is an expression of power structures in society (Foucault, 1991; Rabinow, 1991). In this view, truth is always an expression of temporary and historical procedures of how to obtain and valorize truth (Bacchi & Bonham, 2014). In consequence, theory building needs to be deconstructed in order to properly understand the underlying power structures that; this also goes for the theory on learning styles.

Instead of a theory vs. practice approach, learning styles may also be interpreted as discursive practices. Following Foucault, the term *discursive practices* describes those practices of knowledge formation by focusing on how specific knowledge ("discourses") operate and the work they do. Hence, "discursive practices are the practices of discourses" (Bacchi & Bonham, 2014, p. 174). As such, learning styles are the practices that are the expression of a body of texts that describe the tendency to adapt to the variability with which people undergo learning processes. Fairclough (2003) went even further and also argued that the texts themselves are discursive practices and, therefore, cannot be separated from material and operational practice. Building on Scott (2010), it may be

argued that discursive practices on learning styles, both discourse in texts and other discursive practices, form the expression of a power structure in European societies that tends to emphasize the importance of individualized instruction.

1.3. Reframing the learning styles debate

Debate among educational scholars does not always yield clear results, this is particularly the case for the learning styles debate (Coffield et al., 2004). Levin (2004) advocated employing "people who are skilled in 'translating' research results into plain language for distribution to a non-specialist audience" (p. 15), to improve communication among educationalists. Building on this argument, misunderstandings in the learning styles field may be interpreted as hermeneutical issues, therefore, the aim of this study is to add an hermeneutical perspective to the current dominant ontological questions in the learning styles debate.

In this study, the critical literature on learning styles was analyzed, but not only learning styles as a construct in itself, the focus was on the discourses about learning styles. The research hypothesis was that the misunderstandings in the learning styles field might be caused by the articulation of discourse on learning styles, among other factors. Epistemological positions may relate to the underlying power conflicts between researchers and practitioners or among scholars. Therefore, the research questions that guided us in this study were the following: (1) How is the discourse on learning styles constructed in a selection of educational publications? (2) Does critical discourse analysis (CDA) reveal any power conflict between educational researchers and practitioners?

2. Method

Bourdieu (1984) pointed to the fact that scholars do not stand out of the societal hierarchy of status and power. As a result, a whole field of critical theory has developed that reflects on the relationship between science, society, and culture (Geuss, 1981; Horkheimer, 1982). Following critical theory, the scientific researchers' discourse must be subject to the same criticism as must other discursive practices in society. This study analyzed the construction of discourse on learning styles in a selection of critical publications. The method of CDA was used for this purpose (Blommaert & Bulcaen, 2000; Fairclough, 2003); this method is increasingly being used by educational researchers to investigate the relationships between language and society (Rogers, Malancharuvil-Berkes, Mosley, Hui, & Joseph, 2005).

A selection of four critical publications was made. The texts are in use in several teacher education institutions in the Flanders region (Belgium). They represent a sample of the most relevant texts that a teacher or teacher educator in the Dutch-speaking language area could use when informing himself of the appropriateness of learning styles in an educational context. The sample of texts has a common critical focus on learning styles, but aims at its readership through diverse types of scientific communication (see Table 1). In addition to the international acclaim that the authors of texts A and B received, we believe that the inclusion of texts C and D adds an extra perspective by the more accessible format in which they are edited. The selected publications warn against the use of learning styles in education. The authors' affiliations lie in foreign (A) or domestic (B, C, D) universities and university colleges. Texts B, C, and D are parts of publications with a larger scope; all three aim at reflecting on the educational effectivity, while also addressing topics other than learning styles. In doing so, these texts seek to reach a broad public readership of readers interested in educational quality. All sections on learning styles have been included in this study; however, this was not the case for sections on other topics in these texts, such as on multiple intelligences (text B), gender differences (text C), or enriched learning environments (D). Table 1 presents meta-data on text-type and claimed readership, based on claims that are found in the journal's mission statement (A), the book's introduction (B, C), and on the website (D).

Important intertextuality (Fairclough, 2003) between the selected texts was noticed. The authors of text B published an extended English translation of their work, together with the first author of text A (De Bruyckere, Kirschner, & Hulshof, 2015). The author of text D is also one of the authors of

Table 1. Summary of selected publications

Text	Reference	Type	Claimed readership	Topic
A	Kirschner and van Merrienboer (2013)	Journal article: peer-reviewed	Educational psychologists, researchers, teachers, administrators, and policy-makers	"Three pervasive urban legends in education"
B	De Bruyckere and Hulshof (2013)	Book: peer-reviewed	"For everyone involved in education, not only for experts"	"Myths on learning and education"
C	Van Camp et al. (2015)	Book: practice-oriented review study	"Teachers, their teacher educators and coaches"	"On the relationship between neuroscience and education"
D	Tijtgat (2016)	Webpage for research dissemination	Teachers – "the educational field"	"Neuromyths"

the book in which text C is represented; however, he is not the actual author of the chapter on learning styles in this book. However, it is possible that the reference to "myths" in text D is even a representation of a certain – conscious or unconscious – intertextuality between this text and texts A and B, which use the same terminology. At the end of this study, reflections on this intertextuality are made. Although the authors are not part of the same research unit, the intertextuality makes it clear that they belong to a sort of "school" of researchers that are influenced by each other.

Essential for CDA procedures is the effort of relating discourse with power structures in society (Wodak & Meyer, 2016). Although CDA can be effectuated along many different procedures, Fairclough (2003) referred to three essential steps, which were also undertaken for this study: text analysis (step 1: description), processing analysis (step 2: interpretation), and social analysis (step 3: explanation). Step 1 involved text analysis in order to deconstruct the discourse on learning styles through the following three elements: (1) the argumentative structure of the text was analyzed; (2) the epistemological assumptions of the authors were analyzed, both explicit references to epistemology and implicit use of epistemology through the arguments of the authors; (3) discursive practice, both textual and other semiotic practices, that relate to power relations were described. For step 2 (interpretation), the results were interpreted using thematic analysis to summarize the descriptive themes of step 1. The themes that emerged were defined and refined with the constant comparative method (Barnett-Page & Thomas, 2009; Thomas & Harden, 2008). During step 3, discursive practices that disclosed the relationship between the authors of the text and the readership were analyzed; both textual and visual elements. The aim of this step is to use the results of the first two steps to explain the social structures.

In order to be able to coherently present the results of the CDA, we chose to integrate the text description and the interpretation of it (Fairclough's first and second step) in the results section of this article. In the results section, a description of each text is presented (Step 1), followed by interpretation (Step 2) in which the descriptive elements are related to elements that refer to the power balance between scholars and their readership. All the relevant information of Step 2 was summarized in the section "processing analysis" at the end of the results section. Subsequent explanation of the results (Step 3) is presented in the discussion section; themes were related to existing research on learning styles against a framework of postmodernist educational epistemology in order to relate the results to relations of power.

In order to supply a more complete overview of the text deconstruction, appendixes were added at the end of this article. Elements of the text that are out of the scope of the analysis are marked with an asterisk (*), cells for which no relevant content was found are marked to be void: (0).

3. Results

In the following section, we demonstrate that the articulation of the discourse on learning styles in these texts is such that unbalanced relationships between practitioners and researchers are expressed.

3.1. Text analysis: Descriptive step

3.1.1. Text A

Text A (Kirschner & van Merrienboer, 2013) was a study of 2716 words, not counting introduction and conclusions. Three main arguments are given to criticize learning styles: (1) the assumption that people can be clustered in different groups is not supported by empirical evidence; (2) information that is used to do so is inadequate, as clustering is usually based upon self-reportage; and (3) the large number of typologies is impracticable. References to a number of peer-reviewed studies illustrate these arguments. In order to convince the reader, citations and supporting arguments are provided. In the following section, the authors try to answer the question whether instruction must be tailored to self-reported learning styles. Again, a lack of empirical proof for such tailoring is used to convince readers to avoid this strategy.

Several elements in the text refer to the positivist epistemological assumptions of the authors. They discuss which "evidence" would be supporting the "learning-styles hypothesis" following the authors. Firstly, a statistically significant interaction between learning style and instructional method is to be determined. Secondly, crossover interactions between instructional method and learning style would, following the authors, provide acceptable evidence. The point that this evidence is lacking is illustrated with several references to studies and the arguments cited in these studies. Subsequently, the authors come to the conclusion that "the field of learning styles (...) so far does not yield any valid educational implications" (2013, p. 176). The rejection of the usefulness of learning styles and its educational implications is based on positivist scientific categories, such as dichotomous categorization and statistical significance in randomized control groups.

Based on this argument, the authors state that teachers "should reject educational approaches that lack sufficient scientific support and methodological sound empirical evidence" (2013, p. 178). In order to reinforce this claim, several textual elements are added: (1) the designation of learning styles being "urban legends"; (2) an introductory example of an urban legend about an alligator in New York City's sewers, which suggests learning styles are as irrational as this prototype of an urban legend; and (3) a claim that pseudoscience is jeopardizing the quality of education. No other graphic semiotic elements are used.

The authors' position toward their readership is twofold. On the one hand, they take the reader seriously by providing an extended and rational plea against learning styles. The authors intend to give an insight into why this would not be a good idea, and they communicate openly on the epistemological arguments that are used to reject learning styles. On the other hand, the position of the authors is so bold that it leaves no space for a practitioner to draw his/her own conclusions on the matter. Positivist epistemology is used to articulate a one-dimensional rejection of learning styles. Eventual practitioners who would still consider the use of learning styles are framed as irrational, and thus, unprofessional.

3.1.2. Text B

The second text under scrutiny (De Bruyckere & Hulshof, 2013) is shorter, with 659 words as part of a 136-page book. It is presented as the first one among 36 "educational myths". The chapter with the first "myth" on learning styles is much more straightforward in its argumentative structure than text A. The text starts with a puzzling introduction that presents a series of claims on learning styles, which is followed by the statement that all of them are "persistent myths". This claim is illustrated with a quote and based on two main problems: (1) the lack of scientific evidence for learning styles and (2) the scarce added value of using learning styles in the classroom. These claims are not

supported by further arguments. The reader is supposed to accept the claims based on the authors' expertise and the reference to a peer-reviewed scholarly article. In the next paragraphs, the authors warn against a particular family of learning styles that distinguishes between auditory and kinesthetic learning styles. A quote in large font and a sad smiley face at the end of the text summarize the whole piece, by trying to catch the readers' attention: "Adapting your lessons to learning styles of students? Barely any scientific evidence for the different typologies, no proof for added value in the classroom" (2013, p. 25).

It is to be noticed that this text fails to give an explanation as to why it would be wrong to use learning styles in the classroom. The argumentative structure almost completely relies on arguments referring to claims of educational researchers and experts. Only the case against the VAK-model that discerns between visual, auditory, and kinesthetic learning styles is elaborated by stating that all kinds of processing information are important for all learners. Whereas text A tries to convince its readership with arguments and references regarding the epistemological categories which they are based upon, this does not happen in text B. Justification of statements lacks any reference to the methodology or epistemology used.

In the introduction of the book, the authors present educationalists' "laziness" as a decisive factor as to why some educational misunderstandings persist. Both authors also reflect in the introductory part on their own convictions ("our vision to education" [2013, p. 16]). They claim to stand "critically-positive" against social constructivist, behaviorist, and cognitivist educational theories. Although the authors aim at "cleaning up the most important educational myths" they do not specify their vision on what good "evidence-based" strategies would be. Nor do they specify upon which epistemology they dismiss the strategies as "pure nonsense" (2013, p. 11). Still, the positivist epistemological assumptions of the authors may be deduced from the dichotomist categorization they use: "it doesn't work like that", "this categorization simply does not make any sense", "this is not so" (2013, pp. 24–25). All of these categories suggest that the authors use positivistic epistemology. The same may be deduced from the authors' statement that "we shall demonstrate that learning styles do not exist" (2013, p. 23).

Again, several elements serve to reinforce the argumentative power of the text. Firstly, the articulation of learning styles as a myth uses the negative connotation of this term to convince the reader of the irrationality of learning styles. Secondly, a semiotic reinforcement is added through a sad emoticon that is translated in the introduction of the book as follows: "the statement is completely, or almost completely false, or there isn't any proof for it" (2013, p. 19). Both these statements, sound much more forceful than the actual chapter on learning styles in the book, and certainly more than in some of the studies on which the claims are based.

The reluctance to show the evidence of why learning styles may not be effective for instruction may be argued for with efficiency reasons. Maybe a book with 36 myths does not leave much space for extensive reasoning. However, it could also be argued that the absence of scientific reasoning, such as presented in text A, is an implicit request for trust in the expertise of the authors. By limiting the text to claims, such as "it simply does not work like that", and by omitting the reasons why this does not work, the authors impose themselves and the authors to which they refer, as "experts-to-be-trusted". Concurrently, they fail to appeal for the readership's rationality. Instead of increasing the reader's professional decision-making through providing evidence for their reasoning, including arguments for and against it, the authors stick to power arguments and an implicit appeal for trust in their expertise.

3.1.3. Text C

Text C (Van Camp, Vloeberghs, & Tijtgat, 2015) presents a paragraph on student grouping based on learning styles in 778 words. The paragraph is part of a chapter on tailor-made learning in which gendered grouping or grouping based on brain anatomy are also considered. The arguments in the text are comparable to De Bruyckere and Hulshof (2013). Several references are made to the same

studies that are also mentioned in text B. Here also, the example of the critique on the learning styles model that distinguishes between auditory, visual, and kinesthetic learners (VAK-model) is used as an example to warn against all types of learning styles. Again, a lack of evidence for the strategy and a lack of correlation between performance and self-reported learning styles are stated referring to peer-reviewed scholarly studies.

In the second part, these statements are compared to what neuroscience "teaches us". Four studies are presented and "why" and "how" neuroscience supports the criticism on learning styles is explained. These arguments again criticize the VAK model by illustrating how interconnectivity in the brain works best when using auditory and visual prompts simultaneously, instead of using them separately. It is also worth noting that the claims are based specifically on neuroscience. The paragraph is concluded with a scheme presenting the argumentation graphically. Again, a large claim is made about students' learning ("students with the same intelligence seem to differ in the way they process learning activities"), is rejected on a delimited basis: the VAK model as a cognitive theory finds no support in neuroscience, as it is clear that all students process information through all modalities.

The authors dedicate the complete first chapter of the book to reflect on the position of neuroscience in an educational context. Neuroscience is situated as one source among others to fuel teachers' decision-making. The authors, therefore, suggest the use of interpretative reasoning "to bridge the gap between two worlds" (2015, p. 20). This proposal reveals the authors' constructivist epistemological position. The authors also specify what they define as a neuromyths. They refer explicitly to "misconceptions as a result of erroneous reading, understanding or citing of scientific facts" (2015, p. 18). After the aforementioned constructivist epistemology, this statement refers to a rather positivist position.

Comparing text C with texts A and B, it differs in two important ways: (1) it grounds its claims on a particular type of science, namely neuroscience, and (2) the text makes no use of power arguments to warn the readership against the use of learning styles in an educational context. Through providing arguments out of this specific scientific domain, the work seems to be done. The authors leave it to the practitioners to draw conclusions for their practice. Moreover, they reflect on the possible arguments that other scientific domains could influence teachers' decision-making. No semiotic reinforcers of the arguments in the texts are used, except for the word "neuromyths" which is used throughout the text, and which is reflected upon extensively. By avoiding generalizing conclusions on the wide field of learning styles, they concurrently put their own arguments into perspective, and they leave it to the professionality of the reader to decide whether to make use of learning styles or not.

3.1.4. Text D

Text D (Tijtgat, 2016) is part of a website on "neuromyths". It introduces a graphic presentation of a man's brain with several hyperlinks marked on it. Each hyperlink provides a controversial thesis. In this section, the thesis on learning styles is analyzed: "We only want to be taught in our own learning style!". The reader is then prompted to make a choice between "True" and "Not true". Depending on the answer, a new part of the text appears. Both options are similar, except for the introductory sentence.

The text states that it is a myth that instruction should be tailored to the student's preferred learning style. This claim is argued with a critique on the typology of auditory and visual learners. Although some space is left for learning preferences, the need for differentiated instruction based on these preferences is disputed, in particular, for more complex information processing. Again, the author gives a large warning against the use of learning styles as a whole category on the reasoning that it critiques a particular type of learning style. This does not leave any space for adepts of other learning styles typologies.

In an introductory section on the website, the author elaborates on what he sees as "neuromyths". He acknowledges that most myths have a small "nucleus of truth", but he also warns against "the exaggerated use of some insights". In addition, the author warns against the representation of brain images in order to give more credibility to reports and articles on brain research. The author does not elaborate further on his own epistemology. Although it is hard to deduce the author's epistemological assumptions from the actual text itself, it is clear that he has a preference for a neuroscientific evidence-based research to inform educational decision-making, which suggests a rather positivist epistemological belief.

The intention of the project of which text D is a part, is "to debunk myths on learning styles, and to inform teachers and educational practitioners and stimulate their thinking" (Tijtgat, 2016). This claim suggests an equal relationship between the author and his readership. However, other elements in the text reveal a rather unequal relationship in which the author uses his power as a researcher to impose his convictions. The first sentence that after a reader chooses "true" as an answer to the thesis on learning styles is: "Do you really believe visual learners must only be prompted with images? The present neuroscientific world proves you wrong". Without references to any study or without reasoning, the reader is supposed to accept this powerful claim. A second element that suggests an unequal power relationship between the author and his readers lies in the graphic representation of the text against the image of a brain. Strangely, it seems as if the author uses the same mechanism that he warns against to reinforce his own claim against learning styles: he introduces the whole text with a background of a brain representation. This frames the text as being solid and credible compared to the neuromyths that are criticized. Thirdly, the use of term "myths" as a header of the website may be used to reinforce the author's statements and to suggest the irrationality of the use of learning styles.

3.2. Processing analysis: An interpretative step

The four texts that were selected in this study all articulate a vigorous critique on learning styles. Each in its own way intends to convince its readers not to use them as a basis for educational purposes. This discourse against learning styles is articulated differently in the texts of the sample under scrutiny. Based on the discourse analysis as shown in the results section, we see the following techniques to convince the readership of the validity of the texts: (1) providing rational arguments or evidence from scientific studies; (2) referring to statements of experts or the authors' own statements rejecting the use of learning styles; (3) reinforcing the message through semiotic elements. These semiotic elements, which are found in the texts of the sample, are the terminology of learning styles being urban legends or myths, and the use of graphic prompts to summarize the significance of the reasoning. The four texts use these techniques in different proportions.

4. Discussion: Explanatory step

An essential step in CDA is to relate discursive practices to existing power structures in society. It is, therefore, the aim of this section to discuss the results of the textual analysis and the subsequent interpretation, relating it to the existing literature on scientific communication.

4.1. Power structures in educational scientific communication

Usher and Edwards (1994) pointed to the resistance of the educational field to incorporate insights of postmodern thinking. With its historical focus on individualistic humanism (Lyotard, 1992), education seems to stand at odds with a philosophy that teaches one to be wary of all kinds of foundationalism. Ramaekers (2002), therefore, argued for a renewed skepticism in educational science, which builds on the insights of postmodernism. In this article, we demonstrate the importance of deconstructing the discourse in the field of learning styles.

In the texts, three discursive techniques were described. In our view, only the first one of these techniques regards educational practitioners seriously as professionals. Both the other techniques rely on power arguments that may be detrimental for the relationship between the educational researchers and their readers. The use of vocabulary such as "myths" and "urban legends", and the

proposed metaphors relies on epistemology that considers positivist scientific concepts as the only valuable concepts to evaluate the quality of scientific research. By doing so, these authors do not acknowledge the insights of postmodern thinking.

For almost two decades many educational researchers and policy-makers have stated a case for evidence-based teaching practice (Hammersley, 2007). The rationale behind this plea is found in medical clinical practice (Elliott, 2001) where nurses are expected to act following strict protocols and procedures. As a result of this epistemology, procedures that are in use in the medical field are now applied to educational sciences (Pirrie, 2001). Although comparison of educational practice with medical practice has been critiqued (Simons, 2003), the quest for "what works in the classroom" continues. As discussion on evidence-based teaching continues, in particular with regard to learning styles, it seems to be resisting the insights of postmodernism. Yet, we believe the exclusive use of positivist epistemology results in power conflicts that may be problematic.

The exclusive use of positivist epistemology leaves no space for the input of the readership. Moreover, this discourse presents researchers as actors with privileged access to the truth. Both these problems may be indicative to explain misunderstandings in the field of learning styles. We must, therefore, consider to what extent the use of positivist epistemology, as an evidence-based method, is fruitful for educational sciences.

Biesta argued: "The focus on 'what works'" makes it difficult if not impossible to ask the questions of what it should work *for* and who should have a say in determining the latter" (2010, p. 5). The present study demonstrates that the claims of evidence-based teaching against learning styles go even further. Teachers who dare to resist and continue to use learning styles are said to be jeopardizing educational quality and they are being framed as irrational through the use of terminology such as "myths" or "urban legends".

Biesta (2010) argued that scientific claims that rely on a strictly positivist instrumentality leave no space for more value-based decision-making or for contextualization of research results. Kelchtermans (2009) equally urged a need for reflective teachers whose reflective practice goes beyond instrumental or technical decision-making. This seems to be the case in the texts that were studied. Using power arguments that refer to scholars' expertise, an unequal relationship between writers' and readers' is established. We believe that this type of arguing is a form of silencing of educational professionals (Liasidou, 2008). In addition to this, semiotic reinforcers are used to irrationally convince the readers. These discursive practices fail to take into account the need for teachers' professional reasoning. Moreover, an imbalanced power relation is established, which may be seen as a source of misunderstandings in the field of learning styles. Building on these findings, we believe that discourse, which is grounded on a more equivocal relationship between scholars and their readership, could foster progress in the learning styles debate.

5. Limitations and future research

In the method section, intertextuality between the used texts is mentioned. We see this intertextuality as an important aspect to notice. It helps in the understanding of how the selection of articles creates a distinct discourse that operates through different types of discursive practices. It would be interesting to study whether pro-learning styles research uses the same discursive practices as the adversaries and, thus, relies on comparable power structures. It may, therefore, be rewarding to invest in further (critical) discourse analysis. The debate may also be projected to other types of educational discourse. In particular, other research arguing for evidence-based teaching may be sensible for this argument. With regard to further research on learning styles, we believe it would be rewarding to further unpack the hermeneutical aspects of existing learning styles research. Given the present paper's argument on the unequivocal relationships between the authors and their readership, it would add to our understanding to which extent practitioners are indeed influenced by these power relations.

This paper relies heavily on postmodernism, yet it does not account for some of its consequences at full length. Postmodernism challenges the modern assumptions and conceptions of individuality. Given our focus on a hermeneutical perspective in the learning styles debate, we chose not to make a deliberation on the significance of learning styles in a postmodernist view. It may be rewarding to rethink the concept of learning styles from a profound Foucauldian perspective in order to adequately answer pending ontological questions on learning styles.

6. Implications

In the learning styles debate, scholars engage both in scholarly texts and in other publications. In this study, we argue that the articulation of discourse on learning styles with the use of the aforementioned techniques is a potential source of misunderstandings on the theme. The underlying epistemology and explicit warnings of some publications may be interpreted as signs of an unequal power relationship between the educational researchers and their readership. Drawing on this claim, we plea for a thoughtful articulation of discourse on learning styles. Scholars should consider these power relations when communicating in their research. In order to diminish the gap between research and practice in this field, it may rewarding to articulate educational research by providing arguments that question the methods used by some studies on learning styles, rather than questioning the existence of learning styles with power arguments. This would enhance teachers' professional decision-making capacities and leave them more space for professionalism. Building on this argument, we argue that a hermeneutical perspective to the learning styles debate is an important added value to the dominant ontological perspective.

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