



How epistemological beliefs relate to values and gender orientation

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ABSTRACT

In response to the current literature on possible systematic differences in the epistemological beliefs of men and women and between members of different cultures, this paper examines the way psychological constructs associated with gender (i.e. gender orientation) and culture (i.e. values) are related to individual's epistemological beliefs. Specifically, the present study explores the way values (conformity/power) and gender orientation (masculinity/femininity) are related to epistemological beliefs in a sample of $N = 163$ German university students, using written questionnaires. Data were analyzed separately for male and female students, showing different patterns. The more male students agreed to power values, the less they advocated evaluativist reasoning. The more female students agreed with conformity values and the more they described themselves with feminine traits, the less they advocated evaluativist reasoning.

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1. Research on epistemological beliefs

Perry's (1970) noted study on the "intellectual and ethical development in the college years" has served as a starting point for research on "epistemological beliefs" or "personal epistemology." That study analyzed extensive interviews with almost exclusively male students answering the open question "Would you like to say what has stood out for you during the year?" Perry found that the students' views on knowledge and learning developed within a four-stage model. A "dualistic" viewpoint (believing in the existence of definitively right or wrong answers to all questions, known to authorities) was followed by a "multiplist" view (believing that most questions have no clear solutions, that all statements are just personal opinions each equally right), which was followed by "contextual relativism" (believing in the contextual nature of knowledge, so that knowing always implies taking a point of view), and, finally, a "commitment within relativism" (believing that within a given context there are better and worse answers and showing the ability to make considered choices).

A widely agreed-upon definition of the complex construct "epistemological beliefs" comes from Hofer and Pintrich (1997) description of it as a person's beliefs "about the nature of knowledge and the nature of knowing." Although other authors have sometimes used different labels, most models of epistemic development include the following three successive stages that roughly match Perry's scheme: *Absolutism* (or *Dualism*), *Multiplism* (or *Relativism*), and *Evaluativism*

(see e.g. Kuhn, 1991). However, epistemological beliefs not only are a research topic in developmental psychology but have also been studied extensively in the field of educational psychology, for example in relation to strategy use (e.g. Kardash & Scholes, 1996), problem solving (e.g. Schraw, Dunkle, & Bendixen, 1995), (multiple) text comprehension (e.g. Bråten, Britt, Strømsø, & Rouet, 2011) or conceptual change learning (e.g. Qian & Alvermann, 2000). In this line of research, which is typically correlational and cross-sectional, Likert scales were often used instead of interviews. In these questionnaires, the original developmental stage model was more or less implicitly transferred onto a scheme that classified epistemological beliefs according to their degree of "maturity" or "sophistication." But instead of assessing several stages, a *multidimensional* approach was usually followed, often based on Hofer and Pintrich's (1997) conceptualization of four core dimensions of beliefs (with regard to the nature of knowledge: *certainty* and *simplicity*; with regard to the nature of knowing: *source* of knowledge and *justification* for knowing). According to the "consensus view" (Elby & Hammer, 2001), a person's epistemological beliefs are classified as more "sophisticated" if he or she regards knowledge as uncertain and evolving (instead of fixed and certain), sees it as complex and relative (instead of simple and decontextualized), acknowledges the self (instead of external authorities) as a source of knowledge, and values empirical evidence for justification. As a consequence, the *evaluativist* stance was omitted in many of these questionnaires; in the majority of studies "sophistication" therefore equals agreeing with relativist statements and disagreeing with absolutist statements. Some questionnaires, however, include statements representing not only absolutist and relativist, but also evaluativist stances (e.g. Hallett, Chandler, & Krettenauer, 2002; Krettenauer, 2005; Kuhn, Cheney, & Weinstock, 2000).

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The present study is a cross-sectional investigation of the way in which reasoning from an evaluativist position may be linked to a person's gender orientation and values.¹ In analyzing these relationships, the study seeks to understand what lies behind possible differences in the epistemic beliefs between members of different sexes (as gender orientation can be regarded as a proxy for sex differences) or cultures (as values can be regarded as a proxy for cultural differences). In the following, the existing research on gender-related and culture-related differences in epistemic beliefs or positions is briefly summarized.

2. Beliefs about the nature of knowledge and the nature of knowing: Gender-related differences?

In a book entitled *Women's Ways of Knowing*, Belenky, Clinchy, Goldberger, and Tarule (1986) responded to the fact that Perry (1970) had interviewed almost exclusively male students. Belenky et al.'s interview study with 135 women was an explicit attempt to learn more about women's assumptions concerning the nature of truth, knowledge, and authority; and yielded a new classification scheme of different epistemic stances that focused on the metaphor of "voice": 1. *Silence* (feeling powerless and mindless in relation to knowledge and truth), 2. *Received knowing* (a dualistic perspective with only one right answer, provided by powerful and knowing authorities (in which the women themselves have no stake)), 3. *Subjectivism* (similarly dualistic, knowledge is seen as exclusively private and the self as its source), 4. *Procedural knowing* (applying specific procedures for gaining knowledge), 5. *Constructed knowing* (regarding reasoning as context-dependent and oneself as creator of knowledge). By contrasting the views of women with their reading of the male stories gathered by Perry, Belenky et al. (1986) point out how many gender specific views on knowledge and knowing (at all different stages) can be traced back to gender specific experiences, for instance, regarding access to knowledge, the right to express their own views, education, status, and power.

During the following decades of research on epistemological beliefs, evidence for gender differences was mixed. An interview study by Baxter Magolda (1992) revealed gender-related patterns in students' ideas of learning, for instance more women than men used the "receiving pattern" (listening and recoding), while more men than women used the "mastery pattern" (active participation). Some studies comparing men's and women's epistemological beliefs as measured by standardized instruments have reported gender differences, but usually only on some or even on just one of the dimensions measured and generally only with small effects. For instance, Schommer (1993) reported that male and female high school students did not differ on their views regarding "certainty of knowledge" and "simplicity of knowledge", while girls believed less in "fixed ability" and less in "quick learning" than boys did. Bendixen, Schraw, and Dunkle (1998) found that male undergraduates were more likely to endorse beliefs in certainty of knowledge than female undergraduates. Similarly, Hofer (2000) found that men were more likely than women to see knowledge as certain and unchanging, and to view authority and expertise as the relevant sources of knowledge. An Italian study by Mason, Boldrin, and Zurlo (2006) revealed that girls gave more non-absolutist judgments than boys. Conley, Pintrich, Vekiri, and Harrison (2004), however, found no gender effect on any of the dimensions measured, and no gender differences emerged in studies by Kuhn and colleagues on levels of epistemological development (Kuhn, 1991; Kuhn et al., 2000). In summary,

different research approaches and different research instruments in different samples seem to lead to different results with regard to gender differences in epistemological beliefs. The ambiguity of the findings also extends to the question of which gender (in case any differences do emerge) displays on average the more "sophisticated" or "mature" way of thinking about knowledge and knowing.

Why should gender differences in thinking about knowledge and knowing be expected in the first place? Hofer and Pintrich (1997) emphasized that, when studying differences between men and women (or between members of different ethnicities or cultures), there need to be theoretical reasons for the possible existence of these differences. In the context of possible gender differences in personal epistemology, the authors proposed thinking of gender as "different contexts of development, just as different cultures provide different contexts" (p. 130), as gender is not an explanatory construct in and of itself. Subsequently, Pintrich (2002) recommended looking at a person's gender orientation instead of his or her biological gender when trying to understand the relation between epistemological reasoning and gender. Gender orientation is usually operationalized as the degree to which a person describes himself or herself with typically masculine or typically feminine traits and can be used as a proxy for how strongly the cultural norms of each gender group have been internalized by the individual.

A study by Harter, Waters, and Whitesell (1997) related adolescent students' gender orientation to their sense of "having a voice" (a crucial topic in Belenky's interviews). Feminine girls reported lower levels of "voice" in public situations as compared to androgynous girls, while no differences between these two types of girls were found in private situations with close friends or parents. Interestingly, the pattern was different for boys. When compared with masculine boys, androgynous boys reported higher levels of voice in private situations, while masculine boys had higher levels of voice in public situations.

One aim of the present study is to explore the relationship of a person's masculinity and femininity to his or her epistemic stance in order to better understand what lies behind any possible gender differences in epistemological beliefs.

3. Beliefs about the nature of knowledge and the nature of knowing: Culture-related differences?

By focusing on white, male, middle-class American students, Perry's study excluded not only women, but also members of other cultures and socioeconomic strata – and was thus open on many points to the criticisms brought up in the well-known debate on ethnocentrism. Considering the vast literature on culture-related differences in preferred ways of thinking (e.g. Nisbett, Peng, Choi, & Norenzayan, 2001), it seems plausible to expect culture-related differences in beliefs about knowledge as well (cf. Karabenick & Moosa, 2005). Cross-cultural studies on epistemological beliefs are scarce, however, and usually suffer from the poorer applicability of measures developed in western culture to other cultures, often resulting in very low reliability of subscales and/or different (if any) factor structure (e.g. Chan & Elliott, 2002; Qian & Pan, 2002; Youn, 2000; for reviews see Buehl, 2008; Hofer, 2008).

Existing studies often show differences in epistemological beliefs between members of different cultures, but the extent to which their beliefs differ seems to covary with the extent of overall differences between the cultures compared. For instance, a study comparing college students in the USA and Britain (Estes, Chandler, Horvath, & Backus, 2003) showed few differences in epistemological beliefs in the two samples, reflecting their relatively similar cultures (cf. Alexander and Dochy (1995) comparing North American and Dutch students). As Hofer (2008) stated, sharp contrasts of beliefs are most likely to be found between cultures that "differ dramatically, particularly in views of authorities" (p. 11). Several studies have, therefore, compared "Western" (or North American/European/Jewish

¹ The vast literature on epistemological beliefs as well as the ongoing discussion about the caveats and pitfalls involved in dealing with this construct, cannot be adequately covered here. See the seminal papers of Buehl and Alexander (2001), Hofer (2008), Hofer and Pintrich (1997), Limón (2006), and Pintrich (2002); for a comprehensive overview; and for a concise discussion of the broad – and sometimes misleading – conceptualization of "sophistication" in this field see Elby and Hammer (2001).

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