

for residents in family medicine a focus on the dyadic doctor-patient relationship should respect the physician's own integrity regarding their professional commitments, both intellectually and ethically.

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Personal Epistemology and Uncertainty

To the Editor:

This letter is in response to the interesting paper "Epistemology and Uncertainty in Primary Care: An Exploratory Study."¹ Epistemology, epistemological beliefs, and uncertainty are three concepts that are ubiquitous in all human activity, even more in clinical activities that involve the use of diverse types of knowledge. Because some of these concepts have different kinds of referents (concrete elements [real] and theoretical elements), the clarity and the precision used in the elaboration of the constructs that define them are of vital importance.

Epistemology as a theoretical construct is a branch of philosophy and an interdependent discipline whose referent is the scientific knowledge. Some of the epistemological problems are gnoseological questions: What do we know? How do we know? What is truth? But also they are methodological questions: What are problems, methods,

approaches, hypotheses, theories, and rules? What is testability: confirmability, refutability, or either?² In contrast, epistemological beliefs (personal epistemology) are constructs that represent a set of informal individual beliefs, which are explicit and implicit; the referents of these constructs are mental processes.³ Epistemological beliefs are not conditions of knowledge since we do not always know what we believe. A study carried out in Lima, Peru suggests that physicians do not know what epistemological beliefs they assume, although of course they are not unconscious.⁴ Personal epistemology has been deeply studied by cognitive sciences; cognitive studies have contributed to the elaboration of the theoretical model in their description and exploration of their relationships with many other aspects of the learning processes (as academic success, reading comprehension, etc).³ It is remarkable that the construct used by Evans and Trotter is not the one proposed by cognitive sciences, particularly because several instruments have been developed, and cognitive sciences have been able to categorize epistemological beliefs into subjectivist, relativistic, realistic, naive, and sophisticated. The instrument used by Evans and Trotter does not describe this construct; it just describes a set of beliefs regarding two social approaches to medicine. In the case that the authors claim that their questionnaire measures not only physicians' beliefs about social aspects of patient care but also physicians' epistemological beliefs, factor analysis should be included to confirm the multidimensionality of the construct.

The referents of uncertainty are concrete things, mental processes. Uncertainty is a mental state, as it represents a state of doubt between two choices and is expressed by anxiety. Therefore, that which lacks a mind cannot be uncertain. In medicine, uncertainty can restrain physicians' therapeutic actions and

at the same time stimulate diagnostic actions, such as requesting auxiliary tests. This occurs because uncertainty derives from a lack of knowledge. Because uncertainty is a reactive mental state to a specific, actual situation, it is difficult to study it using a retrospective questionnaire; by doing this, we can only study the physicians' past reactions, attitudes, and beliefs toward uncertainty but not their experiences of uncertainty. It can be better studied by presenting simulated or real problems to the physicians. I suggest that by using a questionnaire survey, the authors have found a relationship between beliefs but not between uncertainty and epistemology.

Nevertheless, raising the issue of whether there is a relationship between epistemological beliefs and uncertainty is a great merit of this paper, as it represents a heuristic question that should not be ignored and that biomedical research must study in the future.

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Authors' Reply:

We thank Drs Bibace and Watzlawik and Dr Peña for their interest in our article on epistemology and uncertainty in primary care and welcome the opportunity to respond to their comments.

Drs Bibace and Watzlawik present their reactions to our article in the broader context of an integrative commentary on four articles (including ours); we will limit our response to three points relevant to our article. First, Bibace and Watzlawik assert that uncertainty is common to all types of professionals who use general principles to address particular problems. While we certainly do not disagree with this assertion, we note that the focus of our study was on but one of the three types of resources—the conceptual resource of epistemology—identified by Beresford¹ as contributing to uncertainty. Although it would require future research to verify, we suspect that the origin of the uncertainty that Bibace and Watzlawik suggest is actually rooted in the other two, namely, technical resources (inadequate technical or procedural knowledge) and personal resources (not knowing patients' wishes, values, beliefs, etc).

Second, Bibace and Watzlawik note that a medical epistemology is, at its core, a universal that implies particular values. Again, we find nothing to disagree with in this statement. As we stated in our article, a defining feature of a medical epistemology is found in its *a priori* assumptions. Because these *a priori* assumptions by definition are not verifiable and are largely accepted at face value, a medical epistemology is—as Bibace and Watzlawik suggest—an inherently value-based orientation to the practice of medicine. As such, the biomedical and biopsychosocial models most likely reflect as much about historical and cultural values as they do about the manner in which medicine is practiced.

Finally, Bibace and Watzlawik argue that physicians should be flexible in their relations with patients to allow for discussion of the implicit and explicit values inherent to the giving and receiving of medical care. As family medicine

educators, we find ourselves easily persuaded by this argument as it is consistent with the patient-centered model of care. However, learners (ie, students, residents) may ask “why?” That is, why should a physician embrace relational flexibility as an important value, or for that matter, care about their own or their patients' values in the context of a medical encounter? Unanswered, this “why” question may explain the disconnect learners often experience between the ideals of patient-centered care and the realities of modern medical practice.² One way to facilitate answering this question, however, is for medical schools and residency programs to offer workshops or seminars on the epistemological bases of medical practice. Such experiences would allow learners to explore how relational flexibility is consistent with, or connected to, the *a priori* assumptions that support a medical epistemology, as well as to critically evaluate the priorities, limitations, and clinical implications that accompany an epistemological commitment.

We share Dr Peña's concern for clarity and precision around the constructs of uncertainty and epistemology; however, we respectfully take issue with his suggestion that our use of these constructs was poorly defined or misapplied. To begin, Dr Peña offers introductory comments that imply a failure on our part to make a distinction between epistemology and personal epistemology. As we clearly made this distinction (on p. 320, albeit with fewer words), we are puzzled by this criticism and can only conclude that Dr Peña's comments reflect his disagreement with our definitions. As we doubt many readers would be enriched by a lengthy explication of these distinctions and definitions in the context of this reply, suffice it to say that our understanding of the definitions of, and distinction and relationship between, epistemology

and personal epistemology is substantively different than that of Dr Peña. We suggest several excellent resources³⁻⁵ for a more thorough explanation.

Dr Peña also finds it “remarkable” that we did not measure epistemology by using one of the instruments proposed by the cognitive sciences. We find this criticism unwarranted for several reasons. First, Dr Peña's comment shows surprisingly little regard for the two major models of thought and research on personal epistemology: domain-general and domain-specific.³ Domain-general models of personal epistemology assume that beliefs about the nature of knowledge and knowing are consistent across disciplines, whereas domain-specific models assume that beliefs about knowledge and knowing are particular to certain disciplines. We situated our study in the domain-specific model (for reasons that are described in the next paragraph); however, the literature base would certainly have supported our use of either model, or a combination of both, as a legitimate line of inquiry.^{3,5} As such, we find it surprising that Dr Peña would dismiss our approach with such certainty, especially since the very text⁵ he cites as support for his assertion devotes four full chapters to this complex issue.

Second, the type of instrument Dr Peña believes we should have used is more commonly associated with the domain-general model of personal epistemology. However, as the knowledge required to practice medicine is expert knowledge particular to a specific field of study (see Muis et al³ for a detailed discussion of domain-specific knowledge criteria), it seemed more appropriate to us to pursue our project as a domain-specific study. Within the domain of medicine, it is widely accepted that (1) the biomedical and biopsychosocial models represent the two major epistemologies⁶ and (2) beliefs about the psychosocial aspects of patient care are a

defining feature of both models.⁷ Therefore, we believe our use of the Physician Belief Scale (a measure of beliefs about the psychosocial aspects of patient care)⁸ was well-reasoned, theoretically justified, and appropriate. Moreover, the instrument has been used in a variety of studies, has sound psychometric properties, and, contrary to Dr Peña's characterization, is far more than just a measure of "beliefs regarding two social approaches to medicine."

Finally, Dr Peña criticizes our use of a retrospective questionnaire to measure physicians' experiences of uncertainty. While the criticism regarding the use of a retrospective questionnaire is common and certainly has merit, we clearly noted this limitation at the end of our article. Significantly more puzzling, however, is Dr Peña's

assertion that we attempted to measure physicians' experiences of uncertainty. Careful readers will note that what we actually measured was physicians' stress reactions to uncertainty, an entirely different construct. As we detailed and explained in the article, stress reactions to uncertainty are a physician's affective responses (ie, anxiety and concern about bad outcomes) to the cognitive experience of uncertainty, not the cognitive experience of uncertainty itself. Though this distinction is subtle, it is nevertheless important, and we thank Dr Peña for providing us with the opportunity to restate it.

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