Characterizing Epistemic Beliefs Among Scientists: Applying the Q-Method to Science Epistemology

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Nuanced understandings of the nature of science vary between individuals. In situations where student and teacher epistemic beliefs about science differ the student may struggle; these beliefs can influence the way arguments for or against a given scientific subject are constructed – a key practice to the development of science literacy. The goal of this study was to characterize the epistemic beliefs of scientists regarding the social aspects of the nature of science in response to calls to further explore the integration of social epistemology of science into the laboratory. We used the Q method, a combination of qualitative and quantitative methods, to study subjectivities relating to the role of social influences in science. Overall there is a range of epistemic beliefs with overlap between the two factors identified by this study. The two ideologies identified interpret the goals and practices of science very differently. A trend of biologists sorting into factor 2 was detected. Factor 1 displayed an aversion to any absolute statements, while factor 2 leaned toward solid objectivity with recognition for the role of social in science. However, there is considerable uncertainty in both factors about the role of the community in the production of knowledge.