Review of: "PERSPECTIVE: Improving Measurement of Public Objective Knowledge About Hazards"

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On the whole, this is a very strong and insightful Perspective article that summarizes many important methodological considerations, findings, and viewpoints. In doing so, the author succeeds in presenting his central views in a clear and structured line of argument. However, I do not want to go into all the merits and strengths of this paper at this point, but rather, in classic reviewer fashion, discuss and emphasize what I believe is still missing from this approach and what I think has been neglected. I would like to mention three aspects in particular. Since I have no fundamental criticism of this article, but only want to broaden the perspective a little more, I will also take the liberty of citing a few recent references from some of my colleagues and my lab below that might be helpful for this purpose.

The first point concerns the terminology of “objective knowledge” (OK). Strictly speaking, this is not really a point of criticism, since the author himself reflects on this term and clearly states what is meant by it (and in which research context) and explicitly also what is not meant by it. Nevertheless, as a psychologist (with a background in cognitive psychology, but also with a propensity for constructivism), I can't help but stumble over the concept of OK in general and have a strange feeling about it. Can there be such a thing as objective knowledge at all? Of course, in many (scientific) fields there are hard (almost) incontrovertible, undeniable facts (based on sound theories and strong empirical data) and clearly stated information, about which there is a clear consensus in a large part of the scientific community. I am also aware that the OK term is apparently an established term in Risk Analysis research, which does not seem to cause many difficulties within the community. Nevertheless, I think it would be useful to perhaps sensitize this community a bit more to the fact that “knowledge” in many scientific fields is fundamentally a term that, on the one hand, is reserved for individuals, and, on the other, can hardly be considered as an objective representation of reality, but as a cognitive representation that must be individually and subjectively constructed from personal experience. Also, from a systems theory perspective, an “objective” conceptualization of knowledge is problematic or even pointless (cf. Oeberst et al., 2016).

A second feature refers to the issue of measuring knowledge by simple correct/incorrect responses. Branden Johnson himself clearly points out this problem, especially against the background of possible uncertainty of knowledge. Here I would at least like to call attention to the fact that there are attempts in the field of education (especially in medical education) to address the uncertainty of knowledge insofar as the respondents are given the opportunity to evaluate their own certainty of answering (i.e., their confidence), and then this evaluation is weighted accordingly (e.g., Grosser et al., 2021). This measurement method is especially important against the background of the epistemological debate about the extent to which people are able to recognize what they know and what they do not know and whether they are able to

distinguish between knowing and not knowing (von Hoyer et al., 2022).

The third important aspect, which would deserve more comprehensive attention, is that of how the public deals with the fact that research findings, especially the latest findings at the forefront of research (e.g., regarding the assessment of concrete current hazards), are often not fixed findings once and for all, but are provisional and changeable (i.e., they are tentative; e.g., Bromme & Goldman, 2014). Beyond all the important and correct aspects mentioned by Johnson, I think it would also be relevant to consider to what extent the fact of an ever-present (certain level of) tentativeness of scientific findings influences the perception and acceptance of these findings (as well as of science in general) in the public or among scientific laypeople (Flemming et al., 2015). This question is by no means to be illuminated only epistemologically, but, above all, to be clarified empirically. People's evaluation of the reliability and validity of scientific findings may, in turn, have a significant impact on risk assessment and attitudes toward certain issues (Kimmig et al., 2020). Only when we understand people's assessment of the tentativeness of scientific findings, can we develop concepts and approaches to how the perception of science and scientific research can be influenced in a meaningful way (cf. Flemming et al., 2020).

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