

Stimulus Error and the Red Herring of Introspection

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Prior to the early 20th century, a lot of empirical research in psychology concerned itself with descriptions of consciousness, and it was commonly assumed that one could arrive at such descriptions by relying on subjects' reports about the experiences they had when exposed to particular stimuli. In this vein, the tradition of psychophysics in the psychology of perception aimed to formulate laws that would capture the relationship between physical stimuli and the ways in which they were experienced (e.g., Fechner 1860). This raised important methodological concerns, however: On the one hand, one needed independent measures of both stimuli and experience in order to formulate the functional relationship between them. On the other hand, experiences of stimuli could only be accessed by presenting subjects with stimuli, raising the question of whether the description of the experience was potentially contaminated by that of the stimulus. It is this worry that Edward Titchener (1905) addressed when coining the expression "stimulus error." By this expression he meant both (a) the error (on the part of experimental subjects) to mistake descriptions of experienced objects for descriptions of the experience itself and (b) the error (on the part of the experimenter) to treat their experimental subjects as reliable reporters of their own experiences, hence introducing a particular kind of measurement error into psychophysical experiments (see Chirimuuta's contribution to this panel). His proposed solution to this problem was to provide subjects with instructions that would minimize the stimulus error by maximizing the veridicality of their introspective reports (Titchener 1905; Schwitzgebel 2011, ch.5. For the notion of instruction see Hatfield's contribution to this panel).

In my talk I will argue that while the notion of a stimulus error continues to pose intriguing philosophical puzzles, Titchener's attempt to address it by means of a training manual for experimental introspection has produced something of a historical and philosophical red herring insofar as it has created the impression that the problem of the stimulus error is related to introspection per se. On the historical side, this assumption has obscured the recognition that (contrary to behaviorist rhetoric) the main point of contention with regard to Titchener's approach was not his introspectionism, but his structuralist conception of psychology (see also Hatfield 2005; Beenfeldt 2013). On the philosophical side, it has obscured the significance of this issue to at least two topics in current philosophy of science, concerning the role errors play in investigative contexts (see Hon et al. 2009; Alchins 2001; Mayo 1996) and the relevance of the stimulus error to areas of psychological research other than perception or consciousness.

While Titchener may have coined the term "stimulus error," the worry that we read features of stimuli into the experience was articulated by others as well. Two versions of this worry were the following: First, in response to Fechner's psychophysical program, many pointed out that the measurability of the intensity of a stimulus does not imply the measurability of the intensity of an experience (Boring, 1921). Second, Gestalt psychologists argued vehemently that one should not assume a one-to-one correspondence between elements of stimuli and elements of experiences (Gestalt theorists referred to this assumption as the "mosaic hypothesis"). I argue that both of these points express a concern about committing a stimulus error. However, the Gestalt psychological articulation did not call for more accurate introspection and clearly pulled into an entirely different direction from Titchener's articulation, to the point that Titchener and the Gestalt psychologists would effectively accuse each other of committing a stimulus error. This shows, I will argue, that the disagreement lay much deeper and could not be fixed by providing adequate training for experimental subjects. The real issue was what

were appropriate types of stimuli, isolated elements or holistic configurations? This was a theoretical disagreement, which determined the actors' views about experimental methods.

I will argue that my historical analysis affords us insights into (a) the very notion of a measurement error, and (b) the problematic of making inferences from features of experimental tasks to features of the mind. In elaborating on the first point, I will draw on existing literature about the role of errors in experimental science. Deborah Mayo (1996), for example, has argued that scientific knowledge generation consists not only in theory-testing, but also in probing for errors, which can be deeply engrained in some of the very conceptual and material assumptions required in order to run an experiment (see Alchins 2001). My historical case study gives some indication of how difficult this can be. In elaborating on the second point, I will argue that there is a structural similarity between the worries about stimulus error we find in the 19th and early 20th century and more recent considerations (both in psychology and philosophy of psychology) of the question that while it is important to analyze the tasks required of experimental subjects, this does not imply that there is a mental module that is specifically designed for this kind of task (e.g., Bechtel 2008). I will argue that this is a modern-day version of the concern about stimulus errors.

References:

- Alchin, Douglas. 2001. "Error Types." *Perspectives on Science* 9: 38-59.
- Bechtel, William. 2008. *Mental Mechanisms: Philosophical Perspectives on Cognitive Neuroscience*. New York: Lawrence Erlbaum & Associates.
- Beenfeldt, Christian. 2013. *The Philosophical Background and Scientific Legacy of E. B. Titchener's Psychology*. Springer.
- Fechner, G. T., 1860. *Elemente der Psychophysik*. Leipzig: Breitkopf & Härtel.
- Hatfield, Gary. 2005. "Introspective evidence in psychology." In *Scientific Evidence. Philosophical Theories & Applications*, ed. Peter Achinstein, 259-286. Baltimore and London: Johns Hopkins University Press.
- Hon, Giora; Schickore, Jutta; Steinle, Friedrich. (Eds.) 2009. *Going Amiss in Experimental Research*. Springer: Boston Studies in Philosophy of Science.
- Mayo, Deborah. 1996. *Error and the Growth of Experimental Knowledge*. Chicago: University of Chicago Press
- Titchener, Edward B. 1905. *Experimental Psychology. A Manual of Laboratory Practice*. Vol. II: Quantitative Experiments, part 2: Instructor's Manual. New York, London: Macmillan & Co. 8