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**(KELLER AND SCHOENFELD “PRINCIPLES”:
OF PSYCHOLOGY OR FOR PSYCHOLOGY?)**

**LOS “PRINCIPIOS” DE KELLER Y SCHOENFELD:
¿DE O PARA LA PSICOLOGÍA?**

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Resumen

Se hace una evaluación retrospectiva de las contribuciones de Keller y Schoenfeld en “Principles of Psychology”, subrayando su interés por procurar a la vez un texto introductorio y un sistema conceptual coherente para abordar la psicología.

Palabras clave: Keller, Schoenfeld, sistema, enseñanza, psicología

Abstract

A retrospective assessment of Keller and Schoenfeld contributions in “Principles of Psychology” is carried out, with particular emphasis on their interest for providing an introductory text as well as a coherent conceptual system to address psychological issues.

Key words: Keller, Schoenfeld, system, teaching, psychology

In 1950, Fred S. Keller and William N. Schoenfeld (K&S) published their “*Principles of psychology*” (PoP). In contrast to previous three “*Principles*” in the history of Psychology (Herbert Spencer, 1855; William James, 1890; and J.R. Kantor, 1924–1926), this volume was not a founding theoretical proposal, but rather a textbook for college students. However, to say that the book was written for freshmen and senior college students does not do it justice, for it was neither *only* a textbook nor an introductory text. Besides the impact it had on training many generations of outstanding Operant Conditioning researchers (to avoid using the nonproper term *experimental analysis of behavior*; Ribes, 2016), several reasons can account for this.

It may seem ironic, or at least strange for many, that a book written from the B.F. Skinner’s perspective was titled “Principles of psychology”, and not “Principles of behavior” as Hull’s (1943). In the sixties, two introductory texts were titled “The analysis of behavior” written by Skinner himself with James G. Holland (1961), and “Behavior principles” by Charles B. Ferster with M.C. Perrott (1968). K&S did not limit themselves on providing Columbia College psychology students with an introductory textbook. In fact, they tried to provide an introductory book to *psychology*, from a coherent and systematic approach. Such approach was based on B.F. Skinner works, but it took into consideration the current issues in the field of study. Its purpose was to offer an *alternative* approach, which was comprehensive and systematic to early psychological phenomena. No wonder the name of its subtitle *A systematic text in the science of behavior*. To that extent, K&S framed a new way of looking at psychology, coherent and inclusive, that faced the dominant systems of that time: structuralism, functionalism, Gestalt, psychoanalysis, and all the different so-called learning theories. PoP filled a theoretical gap that no other author ever filled in such comprehensive manner, not even Skinner (e.g., *Science and human behavior*).

How do I draw upon such conclusion? By carefully examining PoP’s index (1995, reprint), one could identify how classic psychological problems and phenomena are included along several chapters, each with the sole purpose of understanding them from an operant

conditioning perspective. Obviously, and this is their first merit, this is not book with eclectic information. This book does not cover information about what *all* psychologists do with respect to the most diverse meanings or descriptions of psychological phenomena. Additionally, the wide-ranging review on experimental and theoretical literature covered in the book allows us to recognize the significant amount of experimental studies, especially those studies with animals, which were relevant to K&S operant conditioning systematization.

Two things stand out when browsing through its references. One pertains to psychology at that period, and the other to its authors, K&S. First, its references show the diversity and relevance of the experimental problems that were being studied, and how these were not, as in our times, “restrained” to exhausting variants of the same task or experimental situation, or to the pursuit of data that could fit formal “models”. Most, if not all the studies, focused on *theoretically pertinent* issues for a science of psychology. This provided a way to systematize them coherently, even when the theoretical approach to a certain issue was different, and contrasts with what occurs today, whether in a journal article or in a book, where extended bibliographies are restricted to certain task, experimental situation, or formal model, without the least possible integration with a general theory. To put it this way, PoP’s bibliography reflects a different ethics in the search of knowledge. Secondly, cited work shows us the broad interests and conceptual extent of K&S. They include leading theorists and researchers from the preceding seventy years—unlike nowadays emphasis on the “most current”—which demonstrates a deep and wide knowledge regarding the foundations of their proposed systematic approach. PoP does not summarize Skinner’s experimental work, nor its theoretical approach, which were at that time still restricted to operant conditioning as a *functional* reflex, but it elaborates a coherent system built to examine all psychological phenomena, in human and animal behavior, based on conditioning theory. For that purpose, they reach out to Pavlov, Thorndike, Kantor, amongst others, which allowed them to properly inform themselves. In a similar manner, they present Skinner’s first

approaches to verbal behavior, even before these were included in his book *Verbal Behavior* (1957).

Interestingly, in 1976, during what was still the *Midwestern Association for Behavior Analysis* in Chicago, I had the opportunity to talk to Fred S. Keller, who I knew since 1972 when I invited him to the II International Symposium on Behavior Modification (*II Simposio Internacional de Modificación de Conducta*) in Mexico City (Ribes, 1984). As I used to, every time I was in Chicago, I would visit J.R. Kantor house. A few days before meeting Keller, Kantor told me how much he appreciated Keller—contrary to his opinion about Skinner—and recalled that in 1948, while K&S were writing their book, Keller wrote him a letter announcing his visit to discuss several aspects about the analysis of language. Sardonicly smiling, Kantor concluded with “he never showed up”. I told Keller I was visiting Kantor every day, he then told me: “tell Robert I still remember the letter I wrote, and that I’m looking forward to seeing him”. He never went, but it is worth noting how even after 20 years, Keller would still remember an unfulfilled promise. However, with his paper “J. R. Kantor’s objective psychology of grammar and psychology and logic: a retrospective appreciation”, Schoenfeld (1969) did keep that promise (neither book was mentioned in PoP). In his manuscript, Schoenfeld expressed his surprise at knowing that Skinner did not mention Kantor’s work in *Verbal Behavior*, despite its obvious influence. As a side note, this article was one of the non-explicit reasons behind Skinner’s distancing from Schoenfeld.

Going through the chapters covered in the book, several aspects are worth mentioning. The first is the fact that it covers psychology-relevant issues, going through the main sources, and assessing contributions provided from different theoretical perspectives, in the opposite direction of current psychology, and not only in so-called behavior analysis. K&S were well informed, and they knew about previous and current points of view about experimentally-addressed issues. They were not part of a crew or sect, with conceptual inbreeding and autophagy, that “discovered”—if that was the case—what was already described or studied years before, as it currently happens.

They thought that theoretical strength does not result from the “intentional” ignorance, but quite the opposite. Thus, they considered “non-operant” authors in every chapter. In some cases, they pointed out remarkable intuitions from “mentalist” psychologists like Titchener, as in the analysis of meaning in terms of chained covert responses. Similarly, when writing about the word-association experiment (originally used by C. G. Jung), they especially recommended Woodworth’s review in his *Experimental psychology* (1938): “You should now be able to appreciate some of the factors involved in this kind of experimentation and find, in Woodworth’s examples, plenty of food for thought and some suggestions for future research” (p. 230). Quite different from the narrow scope which currently deprives our discipline.

The second aspect has to do with the explicitness of the fundamentals for their proposed systematic approach. This was not a summary of Skinner’s work (a “lone wolf” at that time), but rather an opportunity to employ a dynamic reflex approach, as stated by them, for the experimental study of human and animal behavior. For that matter, even though they deemed Watson’s proposal of reflex classification as limited, they did acknowledge his foundational contribution. I found such a critique to be incorrect, since Watson focused on habits, as dynamical compounds of conditional reflexes, highlighting motor reflexes from Bekhterev (1913/1953). Later, Schoenfeld (1983) rescued Watson’s contribution on establishing a scientific psychology. The book includes a systematic review of Pavlov’s works and his conditional reflex method for the study of respondent conditioning, highlighting his concepts as a basic tool in the analysis of behavioral processes: extinction, generalization, discrimination, reinforcement, chaining, among others. In fact, eight out of ten chapters are organized based on such processes. In them, classical psychological issues “emerge” once these processes are analyzed: forgetting, concepts, perception, meaning, feelings, and others. The last two chapters are dedicated to emotion and feelings, and to social behavior and language. It is in the latter that they anticipate Skinner’s proposal on language—which had not been published yet—particularly describing tacts and mands, and the speaker-

listener relationships. Seventy years apart, one could agree or disagree on the points described in PoP, but one must recognize their endeavor to systematize an approach to psychology from a conditioning theory perspective, and their comprehensive bid to including, critically, the most diverse contributions from experimental psychology at the time. In all senses, this is an inspiring work.

The book was a result of the experimental psychology courses offered to undergraduate students at Columbia College since 1947. An additional innovation was delivered with the book: students practiced at the operant conditioning laboratory, applying the principles and skills provided by the course, shaping the responses of rats, establishing discriminated operants, and many additional procedures. Combining laboratory work with the course material was coherent with its approach: running experiments that made possible to alter and modify behavior (white rats in this case) as a result of changes in the stimulus conditions of a specific environment. By doing so, students could recognize all the concepts, procedures and experiments described in the text. Years later, with a similar spirit initially at Universidad Veracruzana (1965), and more radically at UNAM-Iztacala (1975), the animal behavior laboratory became the fundamental method for teaching experimental psychology to undergraduates (Pérez-Almonacid & Gómez-Fuentes, 2014).

PoP cannot be understood without its authors. Fred S. Keller and William N. Schoenfeld were true *teachers*, in a double sense. First, they were always committed, in a critical manner, to the construction of a scientific psychology, a science of behavior, and as such, they would never settle for “*half-truths*”, nor partial or biased information. They had to *master* knowledge to be part of the construction of this science. Second, they were fully committed to teaching and what had to be taught to those who entered to the study of psychology. Their commitment to teaching was different in both according to their field’s vocation.

Keller developed the PIS (Personalized Instruction System) as a face-to-face and dynamic concept of programmed instruction and teaching machines, proposed earlier by Skinner (1958). Invited by Caroli-

na Bori and Rodolpho Azzi, he first applied his PIS at Universidade de Brasília in 1964 (Keller, 1977). Psychology courses were divided into thematic units, where the student could proceed independently, together with self-assessment guides, as well as the support of introductory lectures and personalized tutorships. Keller proved that students following such a system received higher scores than those enrolled in regular verbal-teaching classes (Keller, 1968). The system was then improved by Ferster and Perrott (1968) using their leading students as advisors for the newly enrolled students. This latter system was employed in Mexico for the first time in 1969 at Universidad Veracruzana by Francisco Montes on psychology students. It was later adapted by the open university system at the Psychology School at UNAM (*Facultad de Psicología*) in 1974. An anecdote which perfectly depicts Keller's ethics and behavior came from the time Fred S. Keller, Carolina Bori, and myself were invited to a meeting on educational innovation at Universidad Central de Venezuela in 1977. We were invited as "experts" on higher education. We were asked to assess and suggest guidance for the university reform that was planned. Being the first speaker, Keller, in a simple and paused way, commented that he was first invited to São Paulo as a recognition for teaching Morse code to the army during World War II, and for writing *PoP*. And, as a result, he was then invited for his PIS, which summed to his expertise popularity with each invitation, but, to be honest, the only experts that knew what had to be done at Universidad Central de Venezuela were their own staff. No outsider should be able to advise them on how to improve teaching at their university. What a difference from today, with plenty of external advisors deciding what is the best and how it should be done! That meeting was a life-lesson to me.

William N. Schoenfeld was a continuous critic of his own practice as researcher, and as such, his fundamental concern was to pass that on to his students. One should not be satisfied by one's research activity, unless one was confident about the strength of one's theory, concepts and procedures that were part of and guided their daily scientific work. One had to always question oneself about the reasons behind doing

things in a certain way and not the other, the reasons why research problems were found under certain perspective but not the other, and why only certain data were important. Just as he claimed about J. R. Kantor (1969), a true thinker does not seek followers. He looks towards training critical thinkers and no followers. And this was his way as a teacher, always asking and always asking, considering and reconsidering why things are being done in a certain way and not the other. What would have happened when certain datum was chosen over the other, or if a specific result was conceived in a manner different from the dominant orthodox view. The development of the T system (Schoenfeld, Cumming & Hearst, 1956; Schoenfeld & Cole, 1972) led to an alternative approach to the orthodox methodology of schedules of reinforcement (Ferster & Skinner, 1957). Schoenfeld's Socratic attitude was not easy to digest for those who only felt safe with certainty and the undisputable truth. In a previous writing I described some of the reactions from professors—ascribed at the experimental analysis of behavior graduate program—to Schoenfeld while at a UNAM seminar in 1973 (Ribes, 1996). How could anyone dare to ask the staff what was a response, a reinforcer, a stimulus? As a teacher, Schoenfeld would always outrage certain vanities, but at least he made sure these were not promoted by him. In 1983, at his inaugural lecture for the Enrique O. Aragón Professorship at UNAM-Iztacala (Schoenfeld, 1983), he sealed off the conditioning-theory period (including the operant) as a major framework for a behavioral science. He just pointed out the need to seek new roads in a field theory. That is something he suggested to us when I inquired him about the new undergraduate program at UNAM Iztacala. Did it made any sense to set it up based on what was now identified as a limited and restricted framework? How could we introduce psychology to our students without going back to overtaken issues? Due to the lack of self-criticism and scholar laziness, history proves us that the second option has been chosen.

To wrap things up, we may qualify the name of K&S textbook: *Principles, of or for psychology?* Putting away all academic strains, and loosing up from all of its mooring meritocracy, Keller and Schoenfeld's

work is an ethical legacy to follow by all of those aspiring to an academic life guided by ethics based on genuine knowledge: being honest to its trainees, and continuously self-critical. Pictures from the last time Keller and Schoenfeld were together, in Guadalajara, Mexico during the First International Congress on Behaviorism and the Sciences of Behavior in 1992, are included below. Both passed away four years later in 1996.



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