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Introduction to the special issue of behavioral processes in honor of Donald A. Riley

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This special issue of behavioral processes is dedicated to Donald “Al” Riley, a central contributor to the field of comparative cognition. Al earned his A.B. at Denison University and later his A.M. at Colorado University. He earned his Ph.D. at the Ohio State University in 1950 under the mentorship of Arthur Melton. While at OSU, he was exposed to research involving both human and animal approaches to cognition and their theoretical convergence. This combination of interests was an essential trait that would be characteristic of his research and mentoring throughout his career. It would be a critical factor in his early recognition and promotion of the field we now call comparative cognition. After receiving his Ph.D. he joined the faculty at the University of California, Berkeley, where he spent his entire academic career, serving stints as both Department Chair and Associate Vice-Chancellor for Academic Development. During the last 19 years he has continued to be active in his role as Professor Emeritus.

Al’s early work included a focus on the role of gestalt principles and relational learning in human and non-human discrimination learning. His 1968 book *Discrimination Learning* is a landmark in the conceptual understanding of relatively complex forms of learning. It should be essential reading for any young scientist interesting in learning how to organize, conceptualize and evaluate a set of research questions. The scope of his early work was wide, ranging from developmental work on discrimination learning in human children to discrimination learning in the octopus to the possibility of echolocation in rats. During the 1970s, Al was among a small group of researchers identified at the time as engaged in the study of animal learning who began to apply ideas and analytic approaches from the “cognitive revolution” in psychology to our understanding of animal learning and behavior. This group saw the potential of a comparative approach to understanding both animals and cognition. The result of this convergence was the seminal volume, *Cognitive Processes in Animal Behavior*, to which Al contributed a chapter on selective attention in pigeons. Over the years, his research contributions on a broad variety of topics have been widely cited and influential. But perhaps more gratifying and meaningful have been the deep and lasting connections he forged over the years with his many students, friends, and colleagues in the field.

Al is a valued colleague to all those who have contributed to this special issue; a mentor to a fortunate few. For those of us trained under Al’s guidance, the experience, although difficult

to describe, had a profound effect on our approach to both research and teaching. Al's mentoring had a quality that can best be described as a cross between the Socratic and Rogerian. He provided the fuel and asked us to provide spark. Asking Al a question about interpretation of results often produced the response, "that is a very interesting question—what do you think?" Did he know the answer and just wanted to see if we could figure it out for ourselves? Did he not want to influence our answer by bias us with his own? Or was he just sure that if we gave it enough thought, we could come up with a pretty good answer ourselves?

Studying with Al was an experience full of challenges. It was not unlike Al to distribute copies of a recent journal article he had just read to be discussed at the next lab meeting and ask us what we thought of it. Invariably we wondered if he knew there was some flaw in the study and he wanted us to figure it out. After we had spent, sometimes, hours discussing the paper, we often were able to list several problems with the study and had designed one or more experiments that we thought might resolve the problems raised. At the end of our lab meeting, we seldom knew whether the issues we had discussed had anything to do with the reason Al introduced the paper for discussion. But it did not matter, whatever the reason, it had proven to be a useful exercise.

Al led lab discussions only in the most subtle way, asking for clarification of what at first appeared to be a minor detail of a proposed alternative explanation for results that we had been discussing but what often turned out to be a major flaw in the argument. Had he seen it all along? Had he wanted us to discover our own error?

Sometimes, when one of us proposed what we thought was a particularly "creative" account of a phenomenon we were discussing but our explanation was difficult to understand, Al would say (without the least bit of condescension or frustration), "write me a letter about that," as if to say, this is just too complicated for me to understand without being able to see it spelled out on paper. The challenge was for us to put it down in writing, where, more often than not, the cold, harsh, words often made it very clear where our reasoning had gone wrong. Had Al seen the error in our explanation when it was discussed but wanted us to benefit from having to write it out in detail? Again, we never knew, but we always benefitted intellectually from the "letter writing" experience.

The challenge Al instilled in us demonstrated the faith that he had in us that as bright graduate students we could come up with the answers to any question we raised. We always got the feeling from him that our ideas were as good as those of anyone doing research "out there". Those were the intangibles, the tools that allowed each of us to strike out in our own way, defining our own research programs, giving each of us the confidence and self-assurance that would enable us to prosper on our own. These tools have always served us well. Most of all, however, Al provided us with a mirror that allowed us to see the best in ourselves. Al, for all this we will be forever grateful.

At the 2010 International Conference on Comparative Cognition (CO3), Al was honored with the Comparative Cognition Society's Research Award, which has been awarded annually since 2002 to an individual who has made outstanding career long contributions to the study of cognitive processes in animals. The participants at CO3 have always included a large number of researchers who have been influenced by Al, but we were particularly pleased that among the participants at in the 2010 meeting were many former students of Al, students of former students of Al ("academic grandchildren", two of whom are also authors of papers in this special issue), academic great-grandchildren (one of whom is an author of a paper in the special issue) and even academic great-great-grandchildren! Across these generations, we are sure that all will recognize the origins of some their own educational

experiences. The articles in this special issue are based on talks given at a special symposium held in Al's honor in that context, together with several additional invited papers.

These papers illustrate several themes that bind Al's research interests. One is the search for, and understanding of, higher level organizations, grouping, or relations among stimulus elements. Al's general interest in stimulus relations and gestalt principles can be seen here in the papers by Bond, Brown, Katz, Batty, Urcuioli, Lazareva, and Wright. A second is the study of visual discriminations from a variety of perspectives, including the involvement of memory, decision processes, and spatial cognition, as represented here by the papers of Blough, Bond, Brown, Katz, Batty, Lazareva, Wright, Zentall, and Urcuioli. Finally, Al tested a variety of species over the years and always encouraged a comparative perspective. The papers here include the rats and pigeons ubiquitous in experimental studies of animal learning and cognition, but also dogs (Roberts, Zentall), corvids (Bond), and humans (Brown, Batty).