Where is "Animal Intelligence"?

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E. L. Thorndike's monograph entitled "Animal Intelligence: An Experimental Study of the Associative Processes in Animals" is a cornerstone of the study of animal learning, frequently cited in textbooks on learning and on the history of psychology. Included in it is Thorndike's description of his experiments with cats in puzzle boxes that led to the articulation of the Law of Effect (Thorndike, 1905). But where is it? To check a citation of the monograph, I recently drew first one reference book and then another from the books on my shelf I thought likely to refer to it. Each book that I consulted correctly identified the title of the monograph (although at least one incorrectly deleted the material following the colon¹); however, the books described its location in a number of different ways.

In what may be its first citation, Thorndike's (1898) abstract of the monograph located it as "Monograph Supplement No. 8 of the PSYCHOLOGICAL REVIEW" (p. 551). Listed in Table 1 are the other citations that I encountered, reproduced exactly as written and with the citing source identified in parentheses after each citation.

Allowing for stylistic differences dictated by different publishers and eras, a remarkable feature of the citations is that no two are exactly alike. They differ in journal title, page number, whole number, or volume number. Each citation contained the correct date but in some instances it appeared elsewhere than after

the journal title (in those cases the date was not included in the quoted citations in Table 1). More remarkable yet, not one is precisely correct. As a result, the monograph was difficult to locate. Depending on the reference selected, one might look in *Psychological Monographs*, *Psychological Review*, or *Psychological Review Monograph Supplements*. In the West Virginia University library the volume in which the monograph was bound carried the binding label "Psychological Review, volume 2, 1897-1899,"² perhaps reflecting the librarian's confusion over the various title changes in the journal described below. In the format suggested in the third edition of the *APA Publication Manual* the correct citation is: Thorndike, E. L. (1898). Animal intelligence: An experimental study of the associative processes in animals. *Psychological Review Monograph Supplements*, 2(4, Whole No. 8). "The" is deleted from the journal title as has been customary in citing it since the first issues of the journal.

The journal in which the monograph appeared changed titles several times in its early years. This change may account for the inconsistent titles but not the variations in citation of volume number (2), issue number (4), whole number (8, which is the ordinal number of the monograph beginning with the first monograph published in the journal), and pagination (the monograph contained 109 pages and each monograph begins with page 1).

The original title of the journal, in 1895, was *The Psychological Review Monograph Supplements*. In March 1905, a new format was introduced with "the entrance of the Yale Psychological Studies into the PSYCHOLOGICAL REVIEW Monograph Supplement Series" (*Psycho-*

¹ A book with the same main title as the main title of the monograph, *Animal Intelligence*, also was published by Thorndike (1911). Like the monograph (e.g., Fantino & Logan, 1979), it sometimes is referred to only as *Animal Intelligence* (e.g., Kling & Riggs, 1971; Lundin, 1979; Mowrer, 1960), leading to potential confusion over which "Animal Intelligence" is being cited. Correspondence about this article should be addressed to K. A. Lattal, Ph.D., Dept. of Psychology, West Virginia University, Morgantown, WV 26506-6040.

² The actual *Psychological Review*, 1898 (volume 5) journal was on adjacent shelf, labeled identically as *Psychological Review*.

TABLE 1

Citations of Thorndike's monograph, "Animal Intelligence: An Experimental Study of the Associative Processes in Animals"

Monograph Supplement No. 8, <i>Psychological Review</i> , 68-72. (Boakes, 1984).
<i>Psychol. Rev., Monogr. Suppl.</i> , 2 (8). (Bower & Hilgard, 1981).
<i>Psychological Review Monograph Supplement</i> , 1898, 2(Whole No. 8). (Brown, 1979).
<i>Psychological Review Monograph Supplements</i> , 2 (No. 4), 109. (Catania, 1984).
<i>Psychological Review Monograph</i> , 2 (Whole No. 8). (Domjan & Burkhard, 1986).
<i>Psychological Review Monograph Supplement</i> , No. 8 (Fantino & Logan, 1979).
<i>Psychological Monographs</i> , 1898, 2(Whole No. 8). (Jenkins, 1979).
<i>Psychol. Monogr.</i> , 2, No. 8. (Kimble, 1961).
<i>Psychological Review Monograph Supplement</i> , 1898, 2, 1-109. (Klein, 1987).
<i>Psychological Review</i> (Monograph Supplement), 1898, 2, No. 8. (Kling & Riggs, 1972).
<i>Psychological Review, Monographs</i> , No. 8 (1898). (Lundin, 1979).
<i>Psychol. Monogr.</i> , 2(4, Whole No. 8). (Mackintosh, 1974).
<i>Psychological Review Monograph</i> , 2 (Suppl. 8). (Malone, 1990).
<i>Psychol. Monogr.</i> , 2, No. 4 (Whole No. 8). (Mowrer, 1960).
<i>Psychological Monographs</i> , 2 (Whole No. 8). (Schwartz, 1989).
<i>Psychol. Rev., Monogr. Suppl.</i> , 1898, 2, No. 8. (Wilcoxon, 1969).
<i>Psy Mon</i> , 1898, 2, #8. (Woodworth, 1938).

logical Review Monograph Supplements, 1905, p. iii). In 1908 in Volume 9 (1, Whole No. 37), "Psychological Monographs" first appeared with "The Psychological Review" on the title page of the volume. In 1910, with Volume 12 (5, Whole No. 52), the first title page appeared specifically labeled *The Psychological Monographs*. In 1921, in Volume 29 (2, Whole No. 131), "The" was dropped from the title, leaving *Psychological Monographs*, which remained its title until the last issue of Volume 80 in 1966 (24, Whole No. 633), after which the journal was discontinued.

The contingencies in effect as each of the authors wrote their citation for the monograph cannot be reconstructed, and

it would be improper to imply that the authors violated the rule drilled into every beginning graduate student to always check every reference against its original source. However, the widespread inconsistencies in the citation illustrates the importance of the rule.

The inconsistency in the citation of such an important reference is a small and somewhat humorous observation, but one with a more general and serious point. Misunderstanding is common among scientists and between scientists and the lay public. In both instances, misunderstanding means that the same putative data control different responses as a function of the different observer's histories. Such misunderstandings can be described in terms of one or more observers not "having the facts straight" and/or in terms of different observers "having" different perspectives or conceptual frameworks. A well-established conceptual framework is likely to be resistant to change, as are revisionist interpretations of phenomena designed to create historical continuity (e.g., Samuelson, 1974). Misunderstanding resulting from not "having the facts straight," even in the case of well-known psychological work, are common. For example, Prytula, Oster, and Davis (1977) described the confusion in the psychological literature over whether Watson and Rayner (1920) used a rat or a rabbit in their classic experiment of fear conditioning with the infant who has come to be known as Little Albert. Harris (1979) extended the Prytula et al. (1977) theme of confusion to more general procedural and interpretive issues related to Watson and Rayner's experiment. Often misunderstandings of even seemingly small points in results or procedures, such as the precise relation between Little Albert's behavior and the aversive stimulus during the respondent conditioning procedure (e.g., Church, 1980; Harris, 1979), separately or over successive iterations can have significant effects in the scientific community. Misrepresentations of conceptual and theoretical issues (e.g., Mahoney, 1989; cf. Catania, 1991) and misconceptions of technological innovations for hu-

mans, such as aircribs (Skinner, 1972/1945; see also Skinner, 1979, pp. 305–306) or devices designed to reduce self-injurious behavior (e.g., Iwata, 1988), can adversely affect both professionals' and laypersons' openness to behavior analytic ideas. Understandably, much of the concern over misrepresentation has been expressed in this journal about depictions of behavior analytic ideas and concepts (e.g., Catania, 1991; Todd & Morris, 1983); of course, misrepresentations of data and theory within behavior analysis and of other points of view by behavior analysts are equally onerous. An important first step in countering misunderstandings, misconceptions, and misrepresentations is taken when all behavioral scientists practice the general rule extrapolated from the present search for "Animal Intelligence": Always examine original sources.

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