

## The Influence of Kantor's Interbehavioral Psychology on Behavior Analysis

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The contributions of J. R. Kantor and his system of interbehavioral psychology to the field of behavior analysis are examined. Two sources of information served to organize this investigation: (1) the historical record as described in the literature and (2) the results of a questionnaire survey sent to past and present editorial board members of the *Journal for the Experimental Analysis of Behavior*, the *Journal of Applied Behavior Analysis*, and *Behaviorism*. The outcome of this investigation showed that Kantor has had a broader influence than might heretofore have been recognized. More importantly, contemporary behavior analytic research and theory are evolving in directions either influenced by, or consonant with, his approach. We conclude that Kantor's interbehavioral psychology and his writings offer an important and valuable source of ideas and concepts for the future of behavior analysis.

Behavior analysis has many and varied roots, some of which can be attributed to broad philosophical movements (e.g., naturalism, objectivism, and functionalism) and others of which can be attributed more specifically to particular individuals (e.g., Darwin, James, Pavlov, Watson, Thorndike, and Mach; cf. Day, 1980). B. F. Skinner and his radical behaviorism, of course, have been pre-eminent influences in the field. Indeed, the major conceptual and technical advances in the study of behavior stem directly from his theoretical formulations and empirical research (e.g., Ferster & Skinner, 1957; Skinner, 1938, 1953, 1957, 1969, 1972, 1974). Overlooked in the development of behavior analysis, however, has been the influence of J. R. Kantor and his interbehavioral psychology.

Although Kantor's influence has the appearance of being negligible, it is not. A careful review of the literature suggests that his influence has been broad, albeit subtle and difficult to discern. As early as

the 1940's, the influence of Kantor's interbehavioral psychology on radical behaviorism was evident (Fuller, 1973; Lichtenstein, 1973); since then, interest in the relationships between the two systems has been increasing, especially during the past 10 years. Papers have been published pointing out the compatibility of the two systems (e.g., Handy, 1973; Mountjoy, 1976), the common approach they take towards numerous conceptual issues (e.g., Moore, 1975, 1981), and the usefulness of combining various aspects of the two systems (e.g., Bijou & Baer, 1978; Morris, in press; Pronko, 1980). In addition to this, a number of presentations have been delivered at professional meetings on these and similar topics (e.g., Delprato, Note 1; McKearney, Note 2; Mountjoy, Note 3; Parrott, Note 4). Despite this interest, however, little attention of a systematic nature has been directed at assessing and evaluating the influence Kantor has had on behavior analysis. The interest evinced thus far warrants such an investigation. At the very least, the historical record should be examined.

In this paper, we assess Kantor's influence on individual behavior analysts and their scientific formulations; we describe the increased recognition interbehavioral psychology has gained within the field; and we evaluate how current and future trends in behavior analysis might be attributed to Kantor's influence, or at least be consonant with his position.

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In order to develop these points, we used two sources of information: (1) the historical record of Kantor's influence as described in the published literature and (2) the results of a questionnaire sent to all present and past editorial board members of the *Journal for the Experimental Analysis of Behavior (JEAB)*, the *Journal of Applied Behavior Analysis (JABA)*, and *Behaviorism*.

Before commencing, one comment is in order. This paper is not designed to present a comprehensive description of interbehavioral psychology or of its theoretical ties with radical behaviorism. This information is available elsewhere (e.g., Kantor, 1959, 1970, 1981; Morris, in press; Mountjoy, 1976; Pronko, 1980).<sup>1</sup> We trust, though, that as the paper progresses, the reader will inductively acquire some understanding of Kantor's approach. We now turn to the first section in which we present the historical record documenting Kantor's influence on behavior analysis.

### THE HISTORICAL RECORD

Jacob Robert Kantor, born in 1888, received his Ph.D. in 1917 under James Rowland Angell from the Department of Philosophy at the University of Chicago. Angell, we should note, was also the advisor of J. B. Watson (with H. H. Donaldson). Kantor was influenced by the functionalists at Chicago (e.g., Dewey, Angell, and Carr), as well as by the early objectivist trend in psychology. The influence of functionalism can be seen in Kantor's emphasis on the adaptive characteristics of behavior, as well as in his emphasis on the inseparable, interactive relationships between stimulus and response functions, as opposed to the *separable and formal properties of environment and behavior*. The influence of objectivism is seen in the naturalism of his approach, and in the early and strong stances he took against mentalism (Kantor, 1920a) and the instinct doctrine (Kantor, 1920b). Kantor was, however, at

variance with aspects of both the functionalist and objectivist movements. He castigated the former for its acceptance of "mental fictions," and the latter for its inherent mechanism which left stimuli and responses devoid of any significant psychological meaning. Kantor has continued to be a vociferous critic on these points throughout his long career (see Kantor, 1971).

As these criticisms apply to behavior analysis, even Skinner has acknowledged Kantor's influence on his views about mentalism and mechanism. With respect to mentalism, Skinner (1967, p. 411; 1970, p. 19) has stated: "Another behaviorist whose friendship I have valued is J. R. Kantor. In many discussions with him . . . I profited from his extraordinary scholarship. He convinced me that I had not wholly exorcized all the 'spooks' from my thinking." As another example of Kantor's influence in this regard, in the preface to the seventh printing of *The Behavior of Organisms* (Skinner, 1938), Skinner (1966, p. x) credited Kantor with convincing him of the dangers inherent in the concept of drive—a concept Skinner used regularly in his earlier work (cf. Skinner, 1938, 1953; see LaShier, 1974). With respect to Kantor's ability to avoid mechanism by emphasizing the functional nature of stimulus-response relationships and by employing a behavioral field or systems theory, Skinner has again acknowledged Kantor's contribution. As a footnote in *The Behavior of Organisms*, Skinner (1938) cited Kantor (1933), noting that "the impossibility of defining a functional stimulus without reference to a functional response, and vice versa, has been especially emphasized by Kantor" (p. 35). Although Skinner has never commented on the field or systems orientation of Kantor's interbehavioral psychology, he has in other contexts said that he found such an orientation "helpful in thinking about the behavior of an organism as a whole" (1979, p. 101) (cf. Krechevsky, 1939, p. 406-407; Verplanck, 1954, p. 307).

Kantor spent his academic career in the Department of Psychology at Indiana

<sup>1</sup> See Parrott (Note 4) for some dissenting views on the shared features of radical behaviorism and interbehavioral psychology.

University, from 1920 until 1959. For much of his tenure there, that department was, as it continues to be, one of the leading behavioral psychology programs in the country (cf. Capshew & Hearst, 1980). Aside from Kantor's prolific publishing career (see Smith, 1976), the most obvious contribution he made to behaviorism while at Indiana was his founding of *The Psychological Record* (*The Record*) in 1937. Throughout the late 1930's, Skinner published a number of single and co-authored papers in that journal (Cook & Skinner, 1939; Heron & Skinner, 1937, 1939, 1940; Skinner, 1937, 1939; Skinner & Heron, 1937), and during the mid-1940's served as one of its associate editors. Although Skinner no longer publishes in *The Record*, many behavior analysts have found this journal supportive of their views, both before and during the development of the specialty behavioral journals for basic (*JEAB*) and applied (*JABA*) research, and for theory (*Behaviorism*) (e.g., Burgess & Akers, 1966; Ferster & Simmons, 1966; Verhave & Owen, 1958). To the present day, *The Record* continues to serve as an important outlet for behavior analytic material (e.g., Killeen, Wald, & Cheney, 1980; Moore, 1980; Picker, Poling, & Parker, 1979; Vukelich & Hake, 1980).

In addition to founding *The Record*, Kantor was also responsible for bringing Skinner to Indiana from Minnesota in 1945. During Skinner's stay there, he and Kantor jointly taught a seminar entitled "Theory Construction in Psychology" and were especially influential in their thoroughgoing functionalism and their criticisms of conventional operationism (Fuller, 1973, p. 319, 321). Fuller (1973, p. 321, 324) and Lichtenstein (1973, p. 332) both made the interesting observation that during this time it was Kantor, not Skinner, who was the more adamant about extending behavioral psychology to human activities, whereas most radical behaviorists tended to pursue basic research with nonhumans. Of those particularly affected by Kantor in this regard were Greenspoon, Kanfer, and Fuller, himself. Indeed, Fuller's 1949 report of his research with a vegetative

human is often cited as the first behavior modification study conducted in the operant tradition (e.g., Ulrich, Stachnik, & Mabry, 1966, p. 65). While Kantor may have been influential in this regard, we should not overlook the work Skinner had been doing on *Verbal Behavior* (1957; cf. 1979, p. 323-325, 333-337), the publication of *Walden Two* (Skinner, 1948), and Keller and Schoenfeld's (1950) then soon-to-be-completed *Principles of Psychology*. In any event, while at Indiana Kantor and Skinner influenced a whole generation of students and staff, as well as summer conference participants (Dinsmoor, Note 5), many of whom went on to become well-known, or better known, behavior analysts. Among them were Bernal, Bijou, Dinsmoor, Ferster, Greenspoon, Homme, Kanfer, MacCorquodale, Malott, Mountjoy, Schoenfeld, and Ulrich (Lichtenstein, 1973).

Skinner left Indiana in 1947 to return to Harvard, and no substantial interaction between him and Kantor seems to have occurred since. Starting in the 1950's, however, some relationships between the two systems began to be noted in the psychological literature. Stephenson (1953), for instance, commented on the similar stance each took towards the acceptance of verbal reports in the science of behavior (p. 111) and on their common approach towards behavior as the subject matter of psychology (p. 115). In addition, Verplanck (1954, p. 308) wrote about the closer affinity of radical behaviorism to interbehavioral psychology than to Hull's or Pavlov's systems, especially in Skinner's and Kantor's rejection of physiological reductionism.

In the 1960's, the implications of Kantor's system for behavior analysis became even better appreciated and recognized. Bijou and Baer (1961, 1965) published a partial integration of some of Kantor's system with Skinner's, as they formally established the behavior analysis approach to child development. Among the features adopted were setting events (Bijou & Baer, 1961, p. 17; see also Gewirtz, 1972, p. 9), the descriptive stage sequences of the universal (foundational),

basic, and societal periods (Bijou & Baer, 1961, p. 24), the concept of ecological behavior (Bijou & Baer, 1965, p. 5-7), and distinctions between the domains of biology and psychology (Bijou & Baer, 1965, p. 10-12). On another issue, Schoenfeld and Cumming (1963, p. 2) commented on the compatibility of Skinner's and Kantor's views in accepting one of an organism's behaviors as a possible controlling variable for another of that organism's behavior. Homme (1965, p. 501) also noted that both men took a common approach to the nature of private events (and/or implicit behavior) in their assertions that these events have no special properties that distinguish them from public events, except accessibility. Finally, in the March, 1969, issue of *JEAB*, Schoenfeld published an intelligent and sensitive retrospective review of Kantor's books on grammar and logic (Kantor, 1936, 1945, 1950), in which he noted several similarities between Kantor's and Skinner's systems, especially in regard to the sources of controlling stimuli over verbal behavior (p. 331, 333) and the nature of meaning (p. 332) and cause-and-effect relationships (p. 339). Skinner, himself (1979, p. 213), has mentioned that he thought Kantor was "on the right track" in the analysis of language.

The 1970's have seen a further expansion of these interrelationships. Bijou (1976) published his volume on the basic stage of child development and, with Baer (Bijou & Baer, 1978), revised their first volume, this time presenting an even more forceful integration of the two approaches. In an interview for his *Festschrift* (Etzel, LeBlanc, & Baer, 1977), Bijou emphasized the importance of Kantor's field orientation and the concepts of stimulus and response function (Krasner, 1977, p. 598-599), and argued for the usefulness of integrating Kantor's philosophy of science with Skinner's experimental theory and methodology (Krasner, 1977, p. 590). Also in the 1970's, Brady (1975) published a chapter in which he adopted parts of the interbehavioral perspective for an analysis of emotional activity by making a distinc-

tion between feelings and emotions. In a paper published in *Behaviorism*, Moore (1975) discussed the similar positions Skinner and Kantor have taken in the interpretation of operationism, especially as it relates to the development of scientific knowledge. Mountjoy (1976) published a paper in the *Mexican Journal of Behavior Analysis (MJBA)* in which he described Kantor's theoretical system and pointed out that it could be usefully combined with Skinner's experimental program, to the benefit of each approach and psychology in general. These benefits, he said, would be in clarifying the relationships between biology and psychology (p. 16-17), in pointing out fallacies in the hereditary doctrine of intelligence (p. 17-18), and in dispelling the notion that human behavior is unique from that of other species rather than as residing on an evolutionary continuum (p. 18-19). We should note that Mountjoy's was but one of eight *MJBA* articles to cite Kantor between 1975 and 1980;<sup>2</sup> in addition, Kantor, himself, has published nine *MJBA* articles (Kantor, 1975, 1977a,b, 1978a,b, 1979a,b, 1980a,b). This relatively high rate of interbehavioral publications in the *MJBA* bespeaks of the strong influence Kantor has had in Mexico, Latin America, and South America. Finally, in the area of applied behavior analysis, Kanfer (Kanfer & Phillips, 1970, p. viii; Kanfer & Karoly, 1972, p. 399) and Krasner (1979, p. 2) have mentioned the important but often overlooked influence Kantor has had on the conceptual development of the field.

Compared to the attention behavior analysts have given interbehavioral psychology, Kantor has commented very infrequently in return. He has in the past cited Skinner (1931, 1938) positively in making arguments against physiological reductionism (Kantor, 1947, p. 79, 136). In addition, he has served as an editorial board member of *Behaviorism* since its inception. Kantor's most substantive com-

<sup>2</sup>The others were Aguirre, Schoenfeld, y Cole (1975), Cabrer, Daza, y Ribes (1975), Ribes (1979), Ribes y Cantu (1978 a,b), Ribes, Daza, Lopez, y Martinez (1978), and Smith (1976).

ments, however, were those delivered at his 1969 invited address to The American Psychological Association's Division on the Experimental Analysis of Behavior (Division 25) in which he presented his own analysis of the experimental analysis of behavior, which he referred to as TEAB. In that presentation and his subsequent 1970 *JEAB* article, Kantor (1970) was both supportive and critical. On the one hand, he called the audience friendly, proclaimed high regard for its anti-mentalism, complimented its naturalism and objectivism, and asserted that TEAB provides "one of the first adequate scientific formulations of experimental psychology" (p. 102). On the other hand, he criticized TEAB of the late 1960's for being a constrained and specialized science of the simple, arbitrary, and laboratory-generated behavior of nonhuman species, especially that behavior influenced simply by "reward" conditions (p. 102). Kantor argued that TEAB must be conducted from "a wide-open perspective" (p. 106) and that it not restrict itself to specialized patterns of research. He then called for behavior analyses of everyday, complex human behavior, especially that referred to by such terms as feeling and emotion, as well as remembering, perceiving, thinking, and problem-solving. Lack of attention to these behaviors left them, Kantor felt, to the "untender mercies" of the cognitivists (p. 105).

We have been able to find only one published reaction to that paper—one by Winokur (1971) in his *JEAB* review of Skinner's *Contingencies of Reinforcement* (Skinner, 1969). Winokur called Kantor's paper "perspicacious" (p. 253), but felt that Kantor was overly harsh in his criticisms, perhaps due in part to an unsympathetic and incomplete reading of the TEAB and radical behavioral literatures. Nonetheless, the TEAB paper has been referred to in *JEAB* by those seeking to make points similar to Kantor's. Salzinger (1973, p. 374), for instance, cited Kantor as an unimpeachable source for the thesis that TEAB should begin to address problems behavior analysts have left to cognitive psychology.

In addition, Shimp (1976, p. 120) cited Kantor's paper in arguing that TEAB has made little progress in developing and experimentally analyzing a useful or relevant concept of memory. We should note, though, that the theoretical move towards cognitive concepts and language suggested by Shimp (1976) would be viewed as mentalistic by Kantor, as well as by behavior analysts (cf. Branch, 1977). As is emphasized later in this paper, interbehavioral psychology offers an alternative to mechanistically oriented behavior theories—of which radical behaviorism is *not* one—so that the limitations of mechanism can be overcome without reverting to mentalism by using cognitive theory and constructs (cf. Morris, Higgins, & Bickel, *in press*, Note 6).

This ends our review of the historical record. Our evaluation of this material is presented later so that we can integrate it with our findings from the next section—the results of our questionnaire study.

### THE QUESTIONNAIRE STUDY

A six-page questionnaire was developed to ascertain further the influence of Kantor and interbehavioral psychology on behavior analysis. In order to obtain opinions from the three primary divisions of behavior analysis—basic research, applied research, and theory—we took as our sample all present (1980) and past editorial board members of *JEAB*, *JABA* and *Behaviorism*. Of the 346 board members, we were able to locate the correct addresses for and send the questionnaire to 318 (91.9%), 143 (45.0%) of whom returned it. Comments were not solicited from the first author of this paper or from Kantor or Skinner, though the last two were sent copies of the questionnaire and letters explaining its purpose.

We asked the board members about their familiarity with the approach and about its relevance to teaching, research, and theory. In addition, we asked questions about the strengths of interbehavioral psychology, its influence on behavior analysis, and the compatibility of the approach with behavior analysis.

Where these comments are not reproduced verbatim, they are summarized and the respondents cited in parentheses. When respondents are not cited, it is because they wished to remain anonymous.<sup>3</sup>

#### *Familiarity with Interbehavioral Psychology*

Fifty-eight percent of the respondents have had some contact with Kantor and interbehavioral psychology, primarily through coursework as students and through professional reading. Of those who have had contact, 32.9% have read from at least one of Kantor's 17 published books. Three books have been read by five individuals, including Shull, Zeiler, and Zuriff; and four or more books have been read by seven, among them Bijou, Brady, Catania, Moore, and Sarbin. The most influential of Kantor's books for these respondents was clearly the outline of his system, entitled *Interbehavioral Psychology* (Kantor, 1959). Also prominently mentioned, though, were his books on grammar (Kantor, 1936), on problems in physiological psychology (Kantor, 1947), and on the history of psychology (Kantor, 1963, 1969). Thirty-seven percent of the respondents who have had contact with Kantor have read at least one of Kantor's numerous journal articles (see Smith, 1976). Six to ten articles have been read by three respondents, among them Hopkins and Shull, while more than ten of the articles have been read by ten respondents, including Bijou, Blackman, Brady, McKearney, Moore, Sarbin, and Zuriff. The most influential of Kantor's articles were his 1966 paper, "Feelings and Emotions as Scientific Events" and his 1970 *JEAB* paper.

#### *Relevance to Teaching, Research, and Theory*

*Teaching.* Seventeen percent of our sample reported that they thought it was important to teach students (primarily graduate students) explicitly about interbehavioral psychology. More than half of this group said they referred to in-

terbehavioral psychology in their teaching, typically as lecture material rather than as assigned reading. About half said that they taught courses that had an explicit interbehavioral orientation. Among the latter were Bijou, Brady, Falk, Pennypacker, Sarbin, Schnelle, and Wahler. The content of these courses covered abnormal psychology, applied behavior analysis, the experimental analysis of behavior, child development, environmental design, and social psychology.

Two of the most frequent comments we had on the usefulness of teaching interbehavioral psychology were that it is important in the historical development of modern behaviorism (Pennypacker) and that, in general, the more students know about behaviorism, the better. It was also mentioned that Kantor should be taught because of his ability to outline the basic metatheoretical assumptions of behavioral psychology (Bijou), because interbehavioral psychology offers an alternative to mechanism and mentalism (Bijou and Sarbin), and because his system has great conceptual breadth.

McKearney pointed out that one of the important values of teaching interbehavioral psychology is that it offers students an understanding of a behavioral field or systems theory. In a related comment, Wahler argued that interbehavioral psychology presents knowledge "crucial for those concerned with the social ecology, and change procedures applied therein." For Brady, interbehavioral psychology should be taught because, he said, "It's the propaedeutic science—the basis for understanding all other sciences and forms of human knowledge!!" To summarize the findings from this section of the questionnaire, let us quote from Schoenfeld (1969):

A teacher, no matter what his personal views, can do no better for his students than to make them at least for a time students of Kantor, knowing they will find it an enriching interlude, one that will contribute to their growth as psychologists. (p. 346)

*Research.* Ten percent of our sample reported that interbehavioral psychology had influenced their research practices or formulations. Among these individuals

<sup>3</sup>A more detailed presentation and analysis of these data are available from the first author.

were Bijou, Brady, Eckerman, McKearney, Patterson, Sarbin, Schnelle, Wahler, and D. R. Williams. More than half of this group reported citing Kantor in their publications, while almost half have conducted research that was specifically influenced by the approach.

Of general value, here, were the breadth of Kantor's system for putting research into proper perspective for the science of behavior; the system's ability to help researchers formulate and discriminate among meaningful research questions (Bijou); and its emphasis on multiple determination (Schnelle), functional analyses (Eckerman), and operationism (Hopkins). Interbehavioral concepts that were seen as being particularly useful in research were those of setting events (Gelfand), ecological stimuli, and historical causation. Finally, a number of respondents noted that Kantor had influenced their research formulations in ways that were subtle and difficult to define—an influence based on Kantor's contributions to the professional development of their instructors and advisors, and to behaviorism in general.

*Theory.* Fifteen percent of our sample reported that interbehavioral psychology had influenced their theoretical or conceptual formulations. Among these individuals were Baer, Bijou, Blackman, Brady, Gelfand, Hopkins, Moore, Newsom, Patterson, Pennypacker, Sarbin, Schnelle, Spradlin, Wahler, and D. R. Williams. About half of this group reported citing Kantor, while a third reported having written articles that dealt in some way with interbehavioral psychology.

Again, the conceptual breadth of the approach was often mentioned as one of its values. Some respondents were more specific on this point, stating that interbehavioral psychology added depth to Skinner's system and helped make clear that radical behaviorism is inherently interactional. Also of value were the system's naturalism, objectivism, empiricism, and functionalism. In addition, Blackman and others acknowledged that Kantor's system had made them more aware of the power of stimulus control;

Schnelle attributed his ecological orientation to the approach; and Wahler and Breiling cited its value in emphasizing the necessity of focusing on larger, more complex fields of analysis in applied research. Also mentioned were the value of reading Kantor for understanding language, emotion, and private events. As in the section on research formulations, a number of respondents again cited the more general but difficult-to-specify influence Kantor has had on their theoretical conceptualizations.

#### *Strengths of Interbehavioral Psychology*

Many of the strengths of interbehavioral psychology have already been mentioned in the previous sections delineating the importance of the system for teaching, research, and theory. In this section, however, several additional points were made. In particular, the system was valued for (a) its comprehensive, logical, and consistent philosophical position (Brady and Zuriff); (b) its ability to sensitize us to the substantial role mentalism has played, and continues to play, in our culture and science (Bijou, Catania, and Hopkins); and (c) its emphasis on stimulus and response functions (Bijou and Eckerman), non-mechanistic accounts of interacting behavioral systems (Sarbin), and the multiple determination of behavior (McKearney and Wahler).

#### *Influence of Interbehavioral Psychology*

In answer to our question about the influence of interbehavioral psychology on behavior analysis, a number of respondents said that Kantor has had little or no influence, some adding that this was lamentable. Others, however, said that all modern behaviorism has been influenced by Kantor in ways that are untraced and uncited. They noted that Kantor was ahead of his time (Erickson) and that he was likely to have greater influence in the future, or at least that the theoretical perspective he offers will have greater influence, even though it may not be attributed to him directly (Bijou, Eckerman, McKearney, and Patterson). Among the most prominently mentioned contributions that Kantor's system has

had or will have are those relating to the interdisciplinary relationships between biology and psychology (Brady), to contextual effects on conditioning, to multiple control in the ecosystem (Wahler), and to historical causation in the analysis of behavior.

#### *Compatibility with Behavior Analysis*

As for the compatibility of radical behaviorism and interbehavioral psychology, most respondents noted that the two are highly similar, especially if one reads Skinner carefully and without prejudice (Baer, Baum, Bijou, Blackman, Brady, Breiling, Catania, Eckerman, Holland, McKearney, Moore, Patterson, Pennypacker, Sarbin, and Shull). Even Skinner has acknowledged this compatibility, noting that their differences were trivial compared to their similarities (Skinner, 1979, p. 325). Specific points on which the two approaches were seen as compatible were in (a) their functional, objective, operational, and contextualistic approach to psychology; (b) their anti-mentalistic; (c) their arguments against physiological reductionism; (d) their discussions of the power and complexity of covert and/or implicit behavior; and (e) their approaches to preception, feeling, thinking, and language.

### EVALUATION OF KANTOR'S INFLUENCE

Having examined the historical record and presented the results of our questionnaire, we now offer an evaluation of the influence Kantor has had on behavior analysis, and on the contributions he and his system may have in the future.

#### *Past Influence*

Our literature search and the returned questionnaires indicate that Kantor has had a profound influence on some behavior analysts, but that their number is limited. We think, however, that this limitation is more apparent than real. Several respondents to the questionnaire were quick to point out that Kantor's influence has been substantial, but unrecognized. Moreover, other respondents qualified their comments by stating that they could not explicitly ascer-

tain the influence Kantor had on them because his influence was so much a part of the academic milieu in which they were educated and continue to work. His views and theirs, they said were often indistinguishable. The most common mechanism for transmitting this influence was Kantor's students who tended to be dedicated teachers, rather than well-known research scientists or clinicians (Bijou, Note 7). To summarize these points, let us quote from Schoenfeld (1969),

The historical development of psychology has already paid [Kantor] the compliment that some of his views are accepted today more widely than when he set them down, though it may not be known that he is their source (p. 330) . . . Since Kantor's voice was among the rare ones in the history of naturalistic behavioral science, the measure of our agreement with him is almost a measure of how far we have come to meet him, or, perhaps, of how much his teaching has filtered into our education without our quite being aware of it. (p. 347)

Schoenfeld's comment is, perhaps, most germane to the development of behavior analysis in the United States because Kantor's influence in Mexico and other Latin and South American countries appears to be much more substantial. As mentioned previously, Kantor is relatively better referenced and published in their behavioral journals than in other American journals. This difference is probably due in large part to the influence of Bijou and Schoenfeld, both of whom have consulted and taught widely throughout these countries.

#### *Current and Future Influence*

As pointed out in Schoenfeld's quotation above and throughout this paper, behavior analysis has in the past moved in directions advocated by Kantor. Kantor's influence at present and in the future, however, also needs to be examined. In doing this, we comment on basic research, applied research, and theory.

*Basic research.* As for basic research, Nevin (1980) published a *JEAB* editorial that made points similar to those raised in Kantor's 1970 *TEAB* paper. In assuming his role as editor of *JEAB*, Nevin wrote:

I believe that it is essential that we attract work on topics that have received little attention in this journal, such as taste aversion learning, and in areas that are just now developing in verbal behavior and other



complex processes that have tempted some into a cognitive orientation, (p. ii)

In line with Kantor's and Nevin's positions, behavior analysis has clearly grown in these directions during the past ten years.

At the conceptual level, we can cite the *JEAB* publication of Michael's (1982) paper on "establishing operations." Establishing operations, he wrote, are to be distinguished from discriminative stimuli in that they "increase the effectiveness of some object or event as reinforcement . . . and evoke behavior that in the past has been followed by that object or event" (p. 149). Though less inclusive than Kantor's concept of setting event (Michael, 1982, p. 151), attention to such operations indicates an increasing appreciation for the multiple determination of behavior and for contextual determinants in general.

At the empirical level, behavior analysts have conducted research in areas that satisfy some of the criticisms raised by Kantor in 1970. Behavioral research has been conducted that relates to topics typically referred to as concept formation (e.g., Dixon, 1977; Sidman & Tailby, 1982), remembering (e.g., Parsons, Taylor, & Joyce, 1981), self-awareness (e.g., Epstein, Lanza, & Skinner, 1981), problem-solving (e.g., Etzel, Bickel, Stella, & LeBlanc, (1982), self-control (e.g., Grosch & Neuringer, 1981), and language (e.g., Lee, 1981). Even within the more traditional topics of operant research, such as *drug effects on schedule performance*, investigators are emphasizing the need to assume a more holistic or systems perspective so as to give greater consideration to multiple control and historical causation (e.g., McKearney & Barrett, 1977). Along similar lines, increased attention is being given to complex relationships in human operant performance (cf. Lowe, 1979), as well as to broader segments of human behavior and behavioral hierarchies (e.g., Bernstein & Ebbsen, 1978). Progress is also being made in the analysis of human social interactions such as trust (e.g., Hake & Schmid, 1981) and cooperation (e.g., Hake & Olvera, 1978). Consonant with

Kantor's (1970) call for examining more than "rewards," we also see the emergence of research on the multiple effects of reinforcing stimuli and their schedules of delivery. Of interest here is the growth of research on adjunctive behavior (e.g., Hamm, Porter, & Kaempff, 1981; cf. Falk, 1970), autoshaping (e.g., Premock & Klipec, 1981; cf. Brown & Jenkins, 1969), shock-maintained responding (e.g., Garnder & Malagodi, 1981; cf. Kelleher & Morse, 1968), and response-independent reinforcement (e.g., Sizemore & Lattal, 1977; cf. Staddon & Simmelhag, 1971).

*Applied research.* In applied behavior analysis, research is also progressing in directions consonant with an interbehavioral orientation. With respect to conceptual issues, both Bijou (1981) and Grossberg (1981) have cited Kantor extensively in arguing for an interactive perspective towards behavioral deviance and behavior therapy, as opposed to cognitive and/or single-minded mechanistic approaches (see also Kanfer & Karoly, 1971, p. 399). Behavior analysts have also evinced an interest in the concepts of behavioral ecology (e.g., Rogers-Warren & Warren, 1977) and setting events (e.g., Wahler & Fox, 1981). The pertinent issues here are the need to take into account more fully (a) the complex nature of organism-environment activities, (b) the multiple effects that change in one behavioral context can have in others, and (c) the production of both *positive and negative side-effects*. The most recent statement of concern over these matters comes from Wahler and Fox's (1981) *JABA* paper in which the authors make a case for explicitly including Kantor's concept of setting events within applied behavior analysis. This conceptual expansion, they argue, will encourage a more complete analysis of the complex conditions of the behavioral ecology, including the effects of temporally distant events on current or future interactions. In addition to these concerns, the interbehavioral orientation is consonant with the current interests of behavioral psychologists in increasingly complex problems in applied behavior

analysis, such as in behavioral medicine (e.g., Katz & Zlutnick, 1975), language training (e.g., MacDonald, *in press*), community psychology (e.g., Nietzel, Winett, McDonald, & Davidson, 1977), and social validity (e.g., Wolf, 1978).

*Theory.* The increasing attention of behavior analysts to history, theory, and philosophy (Day, 1980, p. 257) reflects a trend that is clearly consonant with Kantor's orientation. Kantor has argued for many years that it is essential to scrutinize one's metatheoretical assumptions in order to ferret out the unwarranted influence of mentalism that affects our theoretical concepts, experimental methodology, and interpretation of data (Kantor, 1963, 1969). The best indication of these concerns within behavior analysis is the founding of the journal *Behaviorism* in 1972 by Willard Day. Among issues of special interest to interbehavioral psychology being discussed in this journal are the analysis of scientific practice and epistemology (e.g., Zuriff, 1980), distinctions among behavior theories (e.g., Kitchener, 1977), and the unrecognized mentalism of methodological behaviorism (e.g., Moore, 1981). Other relevant topics are causation (e.g., Staddon, 1973), language (e.g., Powell & Still, 1979), and the nature of private events (e.g., Schnaitter, 1978).

Over and above this, the theoretical foundations of behavior analysis are evolving more explicitly towards a contextual (Morris, Hursh, Winston, Gelfand, Hartmann, Reese, & Baer, *in press*) or transactional model (e.g., Keehn, 1980)—a model that is definitely consonant with an interbehavioral orientation (Handy, 1973; Lichtenstein, 1973, p. 325-331). Although behavior analysis is often viewed as mechanistic (e.g., Overton & Reese, 1973; Reese & Overton, 1970), Skinner has repeatedly and explicitly rejected the mechanistic model (Skinner, 1974, p. 237-241, 1971, 1981). Indeed, a careful examination of the behavior analysis literature clearly reveals the affinity between radical behaviorism and the contextualistic world view (see Pepper, 1942, p. 232-279, and Sarbin, 1977, for descriptions of the latter). Among the

important qualities that make behavior analysis contextualistic are its adherence to historical and reciprocal causation, thereby shunning simple linear causality (Skinner, 1981; Staddon, 1973). In addition, behavior analysis views stimulus and response functions as ever-changing; these functions are not inherent in any particular form of a stimulus or response (see Morse & Kelleher, 1977). As such, the relationships between stimuli and responses are conceptualized as being interdependent (Skinner, 1935). And finally, radical behaviorism holds to a pragmatic theory of truth (Day, 1980; Zuriff, 1980). While these qualities of behavior analysis are often not well recognized, thereby leading to much misunderstanding, they are becoming more explicitly visible. Clearly, they do not characterize a mechanistic orientation.

## CONCLUSION

The interests of behavior analysts are clearly moving in directions compatible with those urged by Kantor. Evolution of this sort is, indeed, inherent in the field. As Day (1980) states it:

I regard [behavior analysis] as a professional perspective that is continually in evolution and that takes its character at any particular period in history in terms of the contrast it must take with other professional perspectives influential at that time. (p. 207)

One of those contrasts at this time is with the renewed vitality of mentalism in what are becoming known as the cognitive sciences (e.g., Fodor, 1981; Hulse, Fowler, & Honig, 1978; Lachman, Lachman, & Butterfield, 1979; Wasserman, 1981). It is here that Kantor may be of immense value to behavior analysis. First, as Blackman pointed out in his comments on the questionnaire, interbehavioral psychology can perhaps guide behavior analysis through this period of history, and hence safeguard the evolution of the field. The value of interbehavioral psychology here is that it offers a set of explicitly articulated metatheoretical assumptions that can serve as the basis for effective arguments against cognitive science. While these

assumptions are largely consistent with those of radical behaviorism, Kantor has written more extensively and in greater detail on these matters than any other behaviorist (see Kantor, 1959, 1971, 1981).

Second, Kantor's writings may also aid behavior analysts who are beginning to attack new and complex problems, especially those left thus far to non-behavioral psychologists (see Day, 1980, p. 256; Sidman, 1979). Kantor's contribution here lies in his extensive writing across many areas of psychology and the philosophy of science (see Smith, 1976).

Third, Kantor's views may be of assistance to non-behavioral psychologists who are moving in directions suggested by his approach, especially as they begin to adopt ecological perspectives for general psychological analysis (e.g., Bronfenbrenner, 1977; Gibbs, 1979), and for perception in particular (e.g., Gibson, 1979), and as they begin to adopt interactive orientations towards social learning (e.g., Cairns, 1979) and personality theory (e.g., Ekehammer, 1974). In summary, interbehavioral psychology may be an important part of the evolution of both behavior analysis and psychology in general by influencing the selection of research areas and the approach taken towards them.

Despite the positive evaluations we have made of Kantor's influence, we feel that it is proper to conclude this paper on a *more conservative note*. Some of the intellectual foundations behind the changes, and prospects for future change, within behavior analysis clearly come from Kantor, either directly or indirectly. We suspect, however, that this is not true for many of the trends we have seen or may see in the future. Rather, these trends reflect broad changes in the field of behavioral science necessitated by the complex nature of the subject matter and our knowledge of it. Nonetheless, if behavior analysis is evolving in these directions, then even though Kantor may exert little influence over these trends, he does offer a rich and appropriate literature for how behavior analysts might

understand these changes and how they might promote further change consonant with their basic metatheoretical assumptions. Moreover, as the field of behavior analysis evolves, interbehavioral psychology can serve as a source for preventing the unfortunate practice of turning to cognitive science for hypotheses, theory, and metatheory in the analysis of complex organism-environment interactions (Morris, Higgins, & Bickel, in press, Note 6). And finally, if Kantor was once ahead of his time, as some questionnaire respondents noted, then perhaps he still is. If so, then behavior analysts might look to him and his interbehavioral psychology for future directions within the field, especially as they attempt to promote a comprehensive and logical system of behavioral science.

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