The Behavior Analyst 2001, 24, 241–253 No. 2 (Fall)

Neither Dark Age nor Renaissance: Research and Authorship Trends in the Experimental Analysis of Human Behavior (1980–1999)

Simon Dymond
APU, Cambridge

Thomas S. Critchfield
Illinois State University

The anniversary of several milestones in the experimental analysis of human behavior (EAHB) provides a prompt for updating previous surveys of EAHB publication trends, which portrayed the field's overall health as good but raised questions about its breadth and trajectory. For the years 1980 through 1999, we examined trends in annual frequency of data-based EAHB articles published in the *Journal of the Experimental Analysis of Behavior* (*JEAB*); in the topical emphasis of those EAHB articles; in the geographic region of origin of EAHB articles; and in the relative contributions of new and veteran authors. Our findings show continued productivity in the field, but contradict an earlier report by showing little sustained growth in EAHB over roughly the past 15 years. In terms of authorship, an increasing proportion of EAHB articles are authored by veteran investigators, although the field also benefits from a steady infusion of new authors. International participation in EAHB is limited, with most EAHB research originating in North America. In terms of content, our findings replicate those of previous reports in showing stimulus control and reinforcement and punishment to be the field's most commonly addressed research topics, although content emphases apparently differ across regions of origin. Overall, the data depict EAHB at the close of the 20th century as a multifaceted enterprise, one that is neither bankrupt nor at its full potential for contributing to the overall analysis of behavior. We close with some observations on the value of this type of archival research and some suggestions for improving the archival characterization of the field.

Key words: the experimental analysis of human behavior, *Journal of the Experimental Analysis of Behavior*, publication trends, research content areas, authorship, geographic origin

---

The experimental analysis of human behavior (EAHB) was once considered to be the exclusive preserve of "a small number of researchers without a clear outlet for their work and with their major function being fulfilled in part by the applied researchers" (Hake, 1982, p. 23). Bemoaning a small human operant data base, Miller (1983) questioned whether "EAHB is just dormant or is actually in the final abortive phases of demise" (p. 552). Somehow, EAHB survived this inauspicious beginning and, almost two decades later, a degree of stability in the field is evident in the recent appearance of several books (e.g., Lattal & Perone, 1998; Leslie & Blackman, 2000; Zentall & Smeets, 1996) and an online journal, the *EAHB Bulletin* (http://www.eahb.org), published by the EAHB Special Interest Group (SIG) of the Association for Behavior Analysis (ABA). Counting several years of ad hoc activity prior to official ABA sanctioning, the EAHB SIG is now in its 22nd year of operation (Johnston, 1983).

Apparently, the demise of EAHB is not imminent. But its proper mission (e.g., Baron, Perone, & Galizio, 1991) and relative vigor have remained points of interest and discussion within

Thanks are extended to Vicki Lee, Maria Malott, and Bill Buskist for helpful comments, and to Bill Dube and two anonymous reviewers for constructive feedback on an earlier version of this article.

Address correspondence to Simon Dymond, Department of Psychology, APU, East Road, Cambridge CB1 1PT, United Kingdom (E-mail: s.dymond@apu.ac.uk).

behavior analysis. Accordingly, over the years there have been several attempts to monitor the health and growth of EAHB, beginning with Buskist and Miller's topical bibliography (1982b) and analysis of EAHB publication trends (1982a). In the latter article, Buskist and Miller reported that the percentage of primary empirical articles in the *Journal of the Experimental Analysis of Behavior* (*JEAB*) employing human subjects ranged from 4% to 19% annually during the period from 1958 to 1981. Consistent with other early appraisals, Buskist and Miller concluded that the data painted "a rather cheerless picture of experimental activity in the study of human operant behavior" (1982a, p. 139).

Hyten and Reilly (1992) tracked *JEAB* publication trends from 1981 to 1991 and reported a "renaissance" in EAHB, characterized by a "dramatic acceleration" (p. 110) in the proportion of studies employing human subjects, which peaked at 42% in 1990 (coinciding with the publication of a special issue on EAHB that year). But Dougherty's (1994) further analysis of *JEAB* articles from the same period (1981 to 1992) suggested limits to the EAHB boom. Dougherty categorized articles into one or more of the following nine content areas (derived from Buskist & Miller, 1982a, p. 140): Aversive Control of Behavior, Choice and Preference, Continuously Programmed Environments, Cooperative Behavior, General Schedule Performance, Instructions, Reinforcement, Stimulus Control, and Verbal Behavior. Growth was evident only in General Schedule Performance, Reinforcement, and Stimulus Control. Overall, these areas accounted for almost 70% of EAHB articles published in *JEAB* since 1958. Unequal attention to content areas was also reported in an analysis of the sources cited most often in EAHB articles (Critchfield, Buskist, Crockett, Sherburne, & Keel, 2000). If breadth is important to the long-term health of a field, data like Dougherty's prompt concern and establish a need for continued monitoring of research trends in EAHB.

An additional factor that may reflect a field's character and vitality is the variety of workers who contribute to it. On a general level, investigators may represent only a few institutions or regions, or they may be widely dispersed. Historically, psychology as a whole has been heavily influenced by North American theorists and researchers, possibly affecting the types of topics and theories that have received consideration. A similar geographic pattern has been reported for articles on the experimental analysis of behavior in *JEAB*, applied behavior analysis in the *Journal of Applied Behavior Analysis* (*JABA*), and general behavior analysis in *The Behavior Analyst* (Dymond, 1997; Dymond, Clarke, Dunlap, & Steiner, 2000), but authorship patterns in EAHB have not been formally examined to date.

On a more specific level, the efforts of a research field may be shouldered by many individuals or by only a few. For example, one recent analysis points to a shrinking pool of contributors to *JABA*. Dymond et al. (2000), reported that the annual proportion of *JABA* articles contributed by new first authors had declined over 25 years, while the proportion of articles incorporating veteran *JABA* contributors (those with five or more *JABA* publications in the previous 5 years) had increased. In both cases, a journal with overlapping content (the *American Journal on Mental Retardation*) showed relatively stable trends during the same period. These data suggest that a relatively small number of repeat contributors account for much of *JABA*'s substance, which should lead to concerns about diversity of content and perspective. Analogous concerns might be especially acute in an area like EAHB, which generates fewer empirical reports each year than does applied behavior analysis.

In the present report, we sought to characterize the track record and current status of EAHB research in *JEAB*

more broadly than has been accomplished in previous studies. First, we determined overall publication rates of EAHB articles, and the types of research questions that they have addressed, through 1999, because there are indications (e.g., Kollins, Newland, & Critchfield, 1999) that EAHB publication rate may have declined since 1992, the last year examined by Dougherty (1994). Second, we examined the scope of international contributions to EAHB to see whether North American dominance, so common in other areas of psychology, also extends to EAHB. Third, we incorporated an analysis of authorship patterns similar to that used by Dymond et al. (2000) in their study of *JABA* publication trends.

While addressing the goals just described, we were forced to reconsider the categories into which the research topics of EAHB articles would be placed. Hyten and Reilly (1994) questioned whether Buskist and Miller's (1982a) original nine content areas properly characterize modern EAHB research agendas. For instance, Hyten and Reilly proposed that the Buskist and Miller categories of Continuously Programmed Environments and Cooperative Behavior could be subsumed under a more inclusive general category of Social Behavior. Hyten and Reilly also noted that research on human behavioral pharmacology, not explicitly recognized in the existing classification system, probably warrants a category of its own. Our revised categories, and the basis for them, are described below.

ARTICLE CLASSIFICATION

Article Selection

All primary empirical reports involving human subjects published between 1980 and 1999 in *JEAB* were examined. Review, theoretical, and technical articles were excluded to focus on EAHB articles presenting original data (cf. Buskist, Sherburne, & Critchfield, 1996; a complete list of articles categorized is available on request from either author).

Article Categories

Articles were categorized according to their geographic region of origin and according to the broad class of topics addressed by their research questions. Regions of origin (based on Dymond, 1997) reflected author affiliations as listed on the article's title page (see Table 1). Articles that listed affiliations in two or more regions were designated as Cooperative publications. Thus, these categories are mutually exclusive.

Content categories (see Table 1) were based loosely on those of Buskist and Miller (1982a), but differed in three ways from those employed in previous investigations of EAHB publication trends (Buskist & Miller, 1982a; Dougherty, 1994; Hyten & Reilly, 1992). First, a new Behavioral Pharmacology category was employed to acknowledge the development and maturation of this area during the past two decades (Higgins & Hughes, 1998; Hyten & Reilly, 1994). Second, for purposes of economy (see Hyten & Reilly, 1994), a single Social and Verbal Behavior category merged four historically low-rate content areas (Instructions, Verbal Behavior, Cooperative Behavior, and Continuously Programmed Environments) in Buskist and Miller's (1982a) taxonomy. Third, an omnibus Reinforcement and Punishment category subsumed three of Buskist and Miller's (1982a) original categories; General Schedule Performance and Reinforcement were combined because of their strong conceptual and methodological ties. Conceptually and methodologically, Aversive Control of Behavior may merit its own category, but was incorporated under Reinforcement and Punishment because of a relative lack of experimental activity in this area since the early 1970s (see Dougherty, 1994).

No attempt was made to create content categories of equal breadth or to

TABLE 1

Description of the categories into which articles were assigned

Category	Description
Region of origin	
Australasia	Australia, New Zealand, Hong Kong, Japan
Europe	Germany, Iceland, Ireland, Israel, Sweden, United Kingdom
Latin America	Brazil, Chile, Mexico
North America	Canada, United States
Cooperative	Two or more regions represented
Content areas	
Behavioral pharmacology	"Behavioral action of drugs" (Branch, 1991a, p. 21), including drugs as reinforcers and discriminative stimuli and pharmacologically mediated effects on operant behavior
Choice and preference	"Manipulation of reinforcer frequency, magnitude, or, in general, reinforcer value in concurrent operant procedures" (Buskist & Miller, 1982a, p. 140), including research on self-control
Reinforcement and punishment	"Parametric investigations of human performance on various schedules of reinforcement" (Buskist & Miller, 1982a, p. 140), including studies examining conditioned reinforcement, punishment, conditioned suppression, escape, and avoidance; primary focus on illuminating fundamental principles of reinforcement and punishment, rather than applying these principles to shed light on other processes
Social and verbal behavior	Empirical studies of social behaviors such as competition, cooperation, and aggression, and studies that involve "the acquisition and maintenance of conversation and vocalization" (Buskist & Miller, 1982a, p. 140), including research on instructions, self-instructions, self-report, and rule governance
Stimulus control	"Studies dealing with the aspects of generalization and discrimination" (Buskist & Miller, 1982a, p. 140), including research on derived stimulus relations; primary focus on illuminating fundamental principles of stimulus control, rather than applying these principles to shed light on other processes

avoid subordinate–superordinate relations among categories. Because research projects often have multiple emphases and make multiple contributions, we assigned each research report to as many content categories as seemed appropriate. For example, an experiment focusing on instructional influences on schedule-controlled behavior might be assigned to both Reinforcement and Punishment (because of concerns about how rules mediate schedule sensitivity) and Social and Verbal Behavior (because the rules and instructions manipulated in the laboratory take verbal form). An experiment employing concurrent schedules of reinforcement to evaluate assumptions of the matching law might be assigned to both Reinforcement and Punishment and Choice and Preference. This approach necessarily resulted in some concordance between categories (Table 2), although it is impossible to judge the extent to which these patterns reflect the structure of our categories versus genuine patterns of hybrid emphasis in the literature.

Author Categories

We sought to evaluate the contributions of veteran investigators, as a measure of stability in the field, and of

TABLE 2

Concordances in the assignment of articles to content categories

Content area	Probability of assignment to other content areas				
	Behavioral pharmacology	Choice	Stimulus control	Reinforcement and punishment	Social and verbal
Behavioral pharmacology		.20	.35	.45	.35
Choice	.11		.00	.57	.17
Stimulus control	.07	.00		.09	.14
Reinforcement and punishment	.10	.22	.10		.28
Social and verbal	.13	.11	.25	.46	

new investigators, as a measure of renewal in the field. A *new investigator* was operationally defined as a first author who had not appeared in any EAHB article in *JEAB* during the preceding 5 years. A *veteran investigator* was defined as any author who appeared in at least five EAHB articles in *JEAB* during the previous 10 years. Using these definitions, we determined separately the proportion of articles in which a new first author and a veteran author appeared.

Observer Training, Article Coding, and Reliability Assessment

Observer training took place in two phases. In the first phase, two observers independently applied the region-of-origin and content categories to EAHB articles in six volumes of *JEAB* and compared their ratings on an article-by-article basis. No disagreement occurred for region-of-origin categories. Content disagreements prompted the recoding of the relevant articles, with results compared as before. Remaining discrepancies were discussed until the observers agreed on category assignments, definitions, and interpretations.

In the second phase, each observer then applied the training experience to the coding of all relevant articles. At least 1 week later, the observers repeated their evaluations for the years 1993 to 1999. Intraobserver agreement was assessed by comparing total counts from the first and second evaluations for each of the content and region-of-origin categories. Across categories, mean percentage agreement (the lower count divided by the higher count and multiplied by 100%) was 92%, with agreement scores for individual categories ranging from 79%[1] to 100%. Because the first and second evaluations produced similar results, the second one was arbitrarily chosen for use in the final data set.

EAHB PUBLICATION TRENDS IN *JEAB*

Overall Publication Rate

The top panel of Figure 1 compares the numbers of primary empirical articles in *JEAB* examining human and nonhuman behavior. Because casual inspection of the data suggested qualitatively different patterns for the earlier and later years of our census period, for this analysis only we extended the article counts back to 1975 to provide some additional historical context. Overall, our data representing years through 1992 closely parallel those reported previously (Buskist & Miller,

[1] Disagreements between raters arose mainly for a subset of articles in the Choice and Preference category. One rater tended to assign selected articles focusing on self-control to Reinforcement and Punishment as a second category, but the other rater did not. To resolve the problem, the more liberal interpretation was used for the final data tallies, resulting in substantial overlap between the two categories (see Table 2), and also functionally better interobserver agreement than reported here.

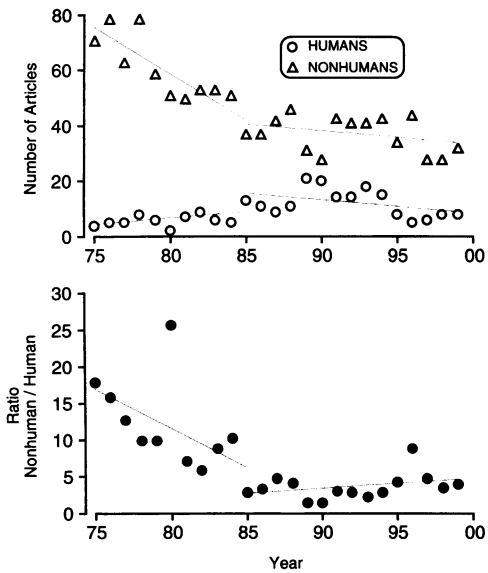

Figure 1. Top: number of primary empirical articles featuring nonhuman and human subjects in the *Journal of the Experimental Analysis of Behavior,* 1975–1999. Bottom: annual ratio of nonhuman to human studies. In all cases, trend lines were determined by applying linear least squares regression to data from 1975–1985 and 1985–1999.

1982a; Dougherty, 1994; Hyten & Reilly, 1992), with minor differences resulting from our including only articles reporting new data. The addition of more recent data allows two distinct periods in the history of EAHB to be discerned. Until about 1985, the number of research articles featuring nonhumans subjects was large, though rapidly decreasing, while the number featuring human subjects was small, though slowly increasing. From approximately 1985 to the present, the number of both types of articles has decreased gradually.

The bottom panel of Figure 1 summarizes the trends just described by showing the ratio of nonhuman to human articles for each year since 1975. For most years through 1985, 10 or more nonhuman studies were published for every human study, although the ratio declined systematically across years. From about 1985 on, roughly two to five nonhuman studies have appeared in *JEAB* for every human study, although the ratio appears to be gradually increasing. In short, EAHB occupies a more prominent position in the experimental analysis of behavior than it did before 1985, but change since then has been minimal, and possibly for the worse. In hindsight, the "renaissance" of EAHB in *JEAB*, described by Hyten and Reilly (1992), appears to have been largely a statistical aberration (because of 2 particularly lean years for nonhuman research; top panel of Figure 1) rather than a portent of growth in EAHB.

Content Trends

Results. Figure 2 shows the cumulative number of EAHB articles representing each of the five content areas defined in Table 1. Research on basic Reinforcement and Punishment processes predominated during much of the first decade of our sampling period. In the 1990s, the rate of publication of Stimulus Control research has exceeded that of other categories. In fact, for the sampling period as a whole, Stimulus Control topics now have been addressed as often as Reinforcement and Punishment topics in *JEAB*. These outcomes appear to reflect intense recent interest in derived stimulus relations, such as stimulus equivalence (e.g., see Critchfield, Buskist, Crockett, Sherburne, & Keel, 2000).

Research on Social and Verbal Behavior has appeared with some regularity in *JEAB* since the mid-1980s, although the rate of publication has decreased somewhat since the mid-1990s. These patterns were obscured somewhat in Dougherty's (1994) analysis because several phenomena contributing to this category were considered separately. As for the remaining content categories, research on Choice and Preference and Behavioral Pharmacology has appeared less frequently than research on other topics. Dougherty previously reported growth in the Choice and Preference area in *JEAB*. Our data indicate that, although interest

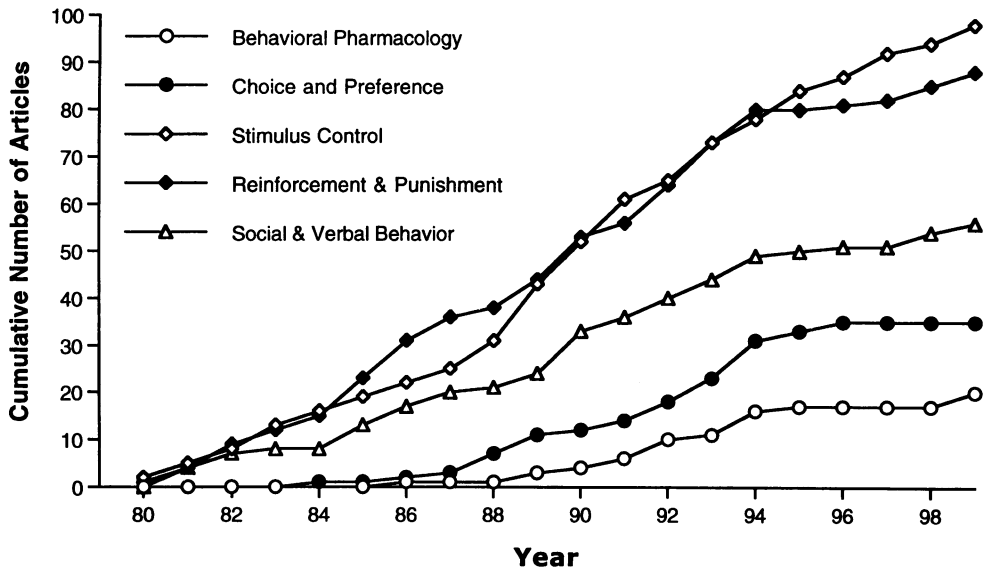

Figure 2. The cumulative number of EAHB articles published each year from 1980 to 1999 from each of the five research content areas in *JEAB*.

in the area continues, the publication rate has slowed since the mid-1990s.

The visibility of Behavioral Pharmacology in *JEAB* is not surprising, because the journal has retained an editor (or associate editor) for behavioral pharmacology for almost 20 years (Nevin, 1982; coincidentally, Nevin's editorial justifying the appointment of an editor for behavioral pharmacology also contained *JEAB*'s first formal call for increased attention to human research). It is worth noting, however, that only three primary empirical reports in Behavioral Pharmacology appeared in *JEAB* between 1995 and 1999, but probably not because this area has lost momentum overall. Human psychopharmacology research influenced by behavior analysis appears with some regularity in mainstream psychopharmacology journals such as *Experimental and Clinical Psychopharmacology*. Quite possibly, *JEAB*'s loss in Behavioral Pharmacology is other journals' gain.

To evaluate content emphasis in a different way, we identified the 22 most prolific EAHB authors (defined as those who published at least four articles in the journal during our census period, including at least one article as first author) and determined the content category most often addressed in each author's articles. Four authors had a dual emphasis (i.e., two areas addressed equally often). Including these dual emphases, 13 of the most prolific authors had a major focus on Stimulus Control, followed by Reinforcement and Punishment (6), Social and Verbal Behavior (4), Behavioral Pharmacology (3), and Choice and Preference (0).

Discussion. Despite the use of newly defined content categories, our analysis of content coverage in EAHB research broadly replicated several previously reported findings. For example, Stimulus Control and Reinforcement and Punishment were the most commonly addressed categories, consistent with outcomes reported by Dougherty (1994). We found that a trend toward increased attention to Stimulus Control, reported by Dougherty, continues through the present day. We also identified some patterns not previously described. For example, Dougherty provided separate counts of several phenomena that we combined into a single category for Social and Verbal Behavior. Our approach revealed sustained

attention to Social and Verbal Behavior. This outcome recalls Hake's (1982) assertion that EAHB should address "those areas where the human subject is the most qualified and prepared subject in the sense that many complex social and verbal behaviors are more accessible to humans [than to nonhumans]" (p. 26). In recent years, the Social and Verbal Behavior area may have benefited from advances in the study of derived stimulus relations, which have informed contemporary behavior-analytic accounts of novel and complex behaviors, including verbal behavior (e.g., Hayes & Hayes, 1992), clinical problems (e.g., Dougher, 1999), and cognition (e.g., Dymond & Rehfeldt, 2000; Hayes, Barnes-Holmes, & Roche, 2001). Nevertheless, Social and Verbal Behavior was the content area of primary emphasis for only a few of the most prolific authors in EAHB, suggesting that interest in this area is wide but not deep.

Another interesting finding was that Choice and Preference research remains relatively uncommon in EAHB, despite the fact that this has been among the most active areas in the experimental analysis of nonhuman behavior (e.g., see http://www.envmed.rochester.edu/wwwrap/behavior/JEAB/), has yielded some of the most reliable outcomes (e.g., Baum, 1979), and increasingly informs the conceptualization of applied problems (e.g., Redmon & Lockwood, 1986; Vollmer & Bourret, 2000; Vuchinich & Tucker, 1998).

Inattention to Choice and Preference and relatively superficial attention to Social and Verbal Behavior may be explained partly in terms of the difficulty of conducting relevant experiments. In the case of verbal behavior, reliable experimental methods remain to be developed for many important topics (e.g., Leigland, 1998). In the case of social behavior and choice, the most interesting research questions may demand parametric or otherwise complex experimental designs that require the extended participation of individual subjects (e.g., Schmitt, 1995). As others have pointed out, it is difficult, and often expensive, to retain human subjects for lengthy experiments (e.g., Pilgrim, 1998). By contrast, many studies of derived stimulus relations published in the past decade have required subjects to participate for only a few hours. Although the present data cannot speak directly to the issue, it is possible that content trends in EAHB derive as much from pragmatic considerations as from the compelling nature of the research questions.

Authorship Trends

Results. Figure 3 shows the cumulative number of EAHB articles originating in each of four geographic regions plus those representing Cooperative collaborations across regions. From the beginning of our census period, North American investigators have authored most of the published EAHB articles. The rate of articles originating from Europe increased in the early 1990s but leveled off soon afterward. Few articles of Australasian, Latin American, or Cooperative origins appeared in *JEAB* during the census period.

The content emphases of EAHB articles also differed across regions of origin during our census period. Figure 4 shows the proportion of articles originating in Australasia, Europe, and North America (too few Latin American articles were available for analysis) that were assigned to the content categories in Table 1. North American authors gave roughly equal attention to three categories (Stimulus Control, Reinforcement and Punishment, Social and Verbal Behavior), whereas Australasian and European authors focused most often on Reinforcement and Punishment. These findings may suggest that international efforts in EAHB are more specialized than those in North America, perhaps because they represent a small number of active EAHB laboratories currently operating outside North America. As we note below, findings like these may be journal spe-

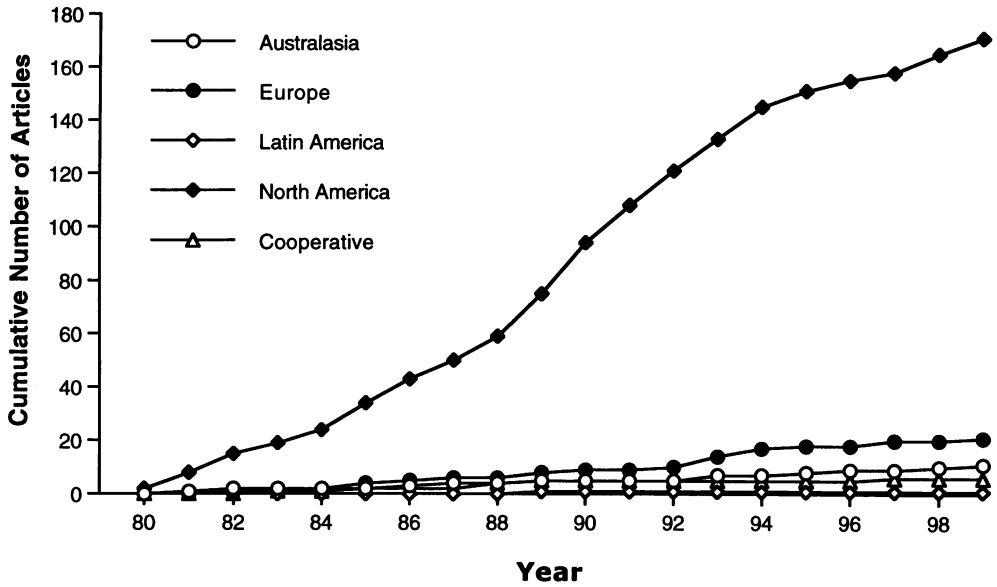

Figure 3. The cumulative number of EAHB articles originating in each of four geographic regions, and a Cooperative category of collaborations across regions.

cific. For instance, a casual perusal of *The Psychological Record* shows a majority of recent European EAHB articles addressing stimulus control issues (see Dymond & Critchfield, in press).

The top two panels of Figure 5 summarize the contributions of new and veteran authors in *JEAB*. Also shown, for comparison purposes, are analogous data for applied behavior analysis articles in *JABA*, replotted from Dymond et al. (2000). For *JEAB*, the proportion of EAHB articles contributed by new first authors has held steady across the sampling period at around .50. Overall, the data suggest that

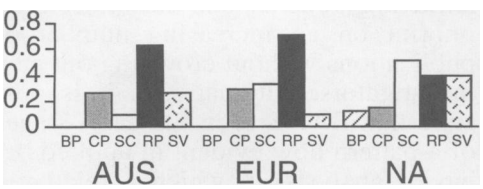

Figure 4. The proportion of EAHB articles originating from Australasia, Europe, and North America addressing each of the five research content areas. BP = Behavioral Pharmacology, CP = Choice and Preference, SC = Stimulus Control, RP = Reinforcement and Punishment, SV = Social and Verbal Behavior.

EAHB benefits from a steady infusion of new talent. By contrast, the proportion of new first authors in *JABA* fell noticeably during the past 10 years. Also, in *JEAB*, the proportion of articles contributed by veteran authors (those with five or more EAHB publications in *JEAB* in the previous 10 years) has increased steadily since 1985. A similar pattern was reported for *JABA*, although the impact of veteran authors may be greater in *JABA* than in *JEAB*. Dymond et al. reported that 37% of the articles appearing in *JABA* from 1995 to 1999 were contributed by authors with 10 or more articles in the preceding decade. By contrast, no EAHB article appearing in *JEAB* met this criterion.

Because EAHB research originating outside North America has begun to make its presence felt only recently (Figure 3), new and veteran investigators might shoulder different portions of the EAHB agenda outside North America than within it. The bottom panels of Figure 5 compare the proportion of articles originating from North America contributed by new and veteran investigators with analogous

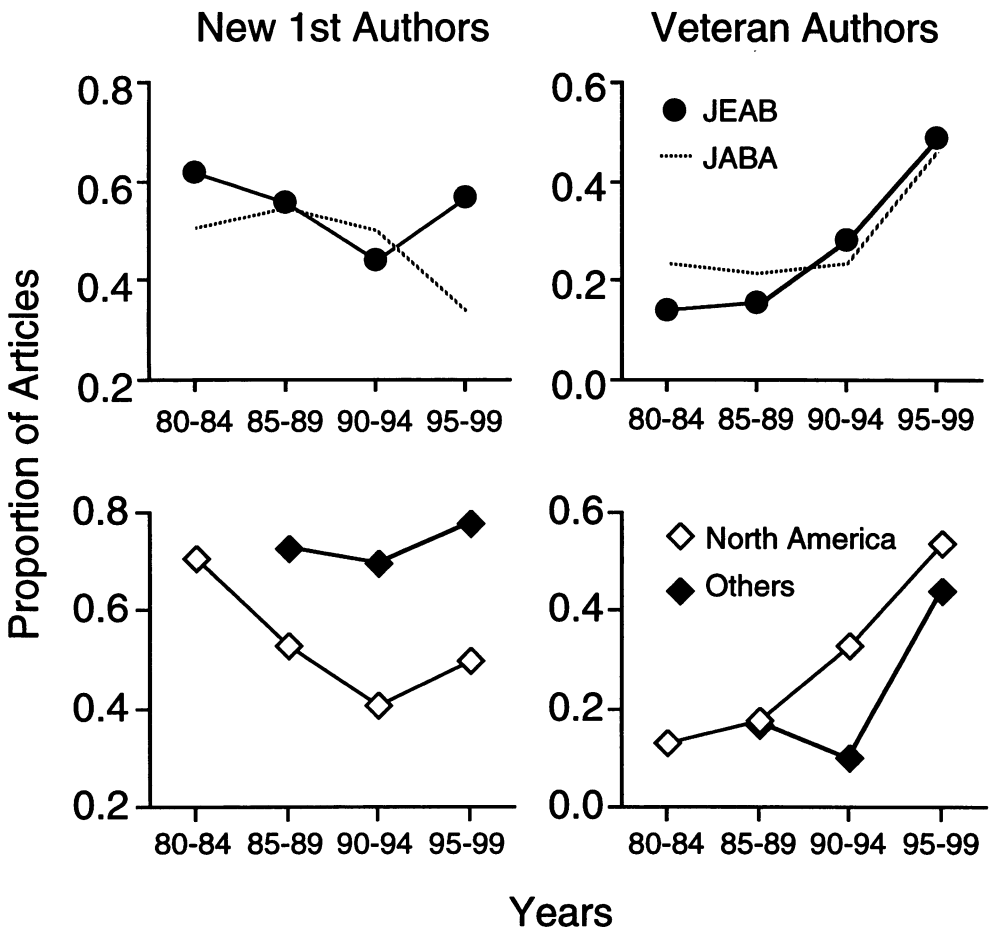

Figure 5. The proportion of EAHB articles by new first authors and veteran authors, from 1980 to 1999, in 5-year intervals. Top: comparison of *JEAB* and data from the *Journal of Applied Behavior Analysis,* based on Dymond et al. (2000). Bottom: comparison of North American authors and those from all other regions combined. In 1980 to 1984, authors from outside North America contributed only five articles; no data are plotted for this interval.

proportions of articles originating from all other regions outside North America. As expected, over the past 15 years, new investigators from outside North America have appeared at a higher relative rate than those from North America. Veteran authors accounted for a larger proportion of North American articles than of articles originating elsewhere.

Discussion. Our data suggest that EAHB currently strikes a good balance between the contributions of new authors and those of veteran investigators. Recent trends, however, suggest that veteran investigators are shouldering an increasing portion of the EAHB agenda. It may be that successful investigators have become successful in attracting students, and thus place their imprint on an increasing number of publications without crowding out new investigators. Alternatively, it is possible that EAHB is in the early stages of a pattern now evident in applied behavior analysis, in which a relatively few individuals account for much of the new empirical work (Dymond et al., 2000). One reason to suspect the latter is the obvious graying of an early generation of EAHB researchers. Some of the most prolific and influential

EAHB investigators of the 1980s are now deceased, retired, in the later stages of their careers, or not currently conducting EAHB research for other reasons. Whether a new generation of investigators can sustain the field's momentum remains to be seen.

Since the 1970s, the Association for Behavior Analysis (ABA) has launched a variety of initiatives designed to increase international participation in behavior analysis. These projects have yielded some positive outcomes (Malott, Davison, & Sato, 1999), but international participation in EAHB remains modest. To date, most EAHB articles from outside North America have originated in Europe, whereas only a small handful of investigators from Australasia and Latin America have contributed articles (cf. Lattal, 1999). Because most EAHB research to date has appeared in English-language journals, one obvious possibility is that language barriers simply restrict the international expression of ongoing EAHB research efforts. If so, steps might be taken to make the publication process more friendly to nonnative English-speaking behavior analysts, such as recruiting international representatives to editorial boards (e.g., Malott et al., 1999) or providing a mentor-based language-checking service. Nevertheless, it seems unlikely that international participation in EAHB is limited strictly by problems in dissemination. Many factors probably discourage the development of EAHB research programs outside North America. For example, in regions in which universities are poorly staffed and funded or are devoted exclusively to applied pursuits, it may be difficult to achieve a critical mass of laboratory investigators who can promote and support each other's research efforts (Moderato, 1998).

GENERAL DISCUSSION

Our 20-year census indicates that EAHB research continues to be published with some regularity, but the data provide no support for projections that EAHB might one day dominate the experimental analysis of behavior (Hyten & Reilly, 1992). *JEAB* currently devotes a minority of its pages to EAHB research, as it has from the beginnings of EAHB. The present report complements previous surveys of the EAHB literature by updating the analysis of content trends in the field and providing, for the first time, information about authorship trends in the field.

With respect to content trends, a comparison across surveys (Buskist & Miller, 1982a; Dougherty, 1994; Hyten & Reilly, 1992) reveals remarkable consistency in the field's topical emphases, suggesting that, at least in the time frame under consideration, EAHB has fulfilled a relatively consistent mission. It should be noted, however, that the content categories employed in each of the relevant studies has been fairly broad. It would be surprising if, at a more detailed level, topical emphases in the field had not shifted over the course of several decades. More specific categories would be necessary to understand the nuances of publication trends relevant to reinforcement theory, aversive control, various types of schedule performances, and so forth. But as categories become more specific, the pool of relevant articles shrinks, limiting the utility of analyses like those performed here. Analyses of tightly defined content areas might be more profitably conducted in the form of a literature review, employing either narrative or quantitative (Critchfield, Newland, & Kollins, 2000) methods.

One obvious limitation of the present study is that, like its predecessors, it focuses on a single journal. EAHB research has appeared in journals other than *JEAB* from the earliest days of the field, and thus the field's characteristics can be fully understood only by surveying other periodicals. For example, Buskist et al. (1996) reported that as many EAHB studies appear annually in *The Psychological Record* as in *JEAB*. EAHB research also can be found with some regularity in specialized behavior analysis publications

such as *The Analysis of Verbal Behavior* and the *Experimental Analysis of Human Behavior Bulletin*, as well as in journals devoted to developmental disabilities, psychopharmacology, experimental child psychology, and so forth. It seems likely that differences in journal mission, editorial policy, audience, and prestige will dictate variations in the types of articles appearing in different periodicals.

Now that several surveys of EAHB publication trends are available, along with analogous studies of other areas in behavior analysis (e.g., Dunlap, Clarke, & Reyes, 1998; Dymond, 1997; Dymond et al., 2000; Normand, Fossa, & Poling, 2000), it may be worth asking what such studies accomplish. It is axiomatic that primary empirical research should take center stage in the experimental analysis of behavior and any of its subfields. But there is value in evaluating a field's progress periodically as well. Traditional literature reviews provide a form of self-inspection by summarizing what is known in a well-defined research area. These reviews can focus future research efforts in the area, but often say little about how the area fits into a broader scientific context. Archival studies like the present survey say little about our understanding of basic principles, but shed light on the allocation of intellectual resources across research areas in ways that literature reviews often do not. Both literature reviews and archival studies can prompt reflection on the opportunities and obstacles that face a field. For example, individual researchers can derive research ideas both from archival studies (which identify "hot" and underinvestigated topics) and from literature reviews (which identify important research questions within a topic). Graduate training programs can employ literature reviews as part of their primary subject matter and draw guidance from archival studies about the proper balance of topics within the broader curriculum.

For nearly two decades, behavior analysts have debated the proper role for EAHB in a science of behavior (e.g., Baron et al., 1991; Branch, 1991b; Hake, 1982; Miller, 1983). Often missing from these discussions have been formal empirical bases for evaluating the field. By broadening the analysis of EAHB publication trends, the present study provides raw material for such evaluative discussions. Nevertheless, because the analysis of publication trends in the experimental analysis of behavior is in its infancy, the implications of publication counts remain to be fully understood. It would be useful, for example, to see EAHB evaluated, not in isolation, but as a contributor to the overall agenda of the experimental analysis of behavior. Presumably, EAHB publication counts mean little without knowing the level of activity in analogous areas of the experimental analysis of nonhuman behavior and the impact of EAHB research on advancing a broader understanding of basic principles. Both literature reviews and various forms of archival studies (including citation analyses; Critchfield, Buskist, Crockett, Sherburne, & Keel, 2000; Perone, 1985) can provide needed information, thus shedding light on the extent to which EAHB serves as an independent enterprise, an extension of analyses first conducted with nonhumans, or an equal partner in the experimental analysis of behavior.

REFERENCES

Baron, A., Perone, M., & Galizio, M. (1991). Analyzing the reinforcement process at the human level: Can application and behavioristic interpretation replace laboratory research? *The Behavior Analyst, 14,* 95–105.

Baum, W. M. (1979). Matching, undermatching, and overmatching in studies of choice. *Journal of the Experimental Analysis of Behavior, 32,* 269–281.

Branch, M. N. (1991a). Behavioral pharmacology. In I. Iversen & K. A. Lattal (Eds.), *Experimental analysis of behavior* (Part 2, pp. 21–77). Amsterdam: Elsevier.

Branch, M. N. (1991b). On the difficulty of studying "basic" behavioral processes in humans. *The Behavior Analyst, 14,* 107–110.

Buskist, W., & Miller, H. L. (1982a). The analysis of human operant behavior: A brief cen-

sus of the literature: 1958–1981. *The Behavior Analyst, 5,* 137–141.

Buskist, W., & Miller, H. L. (1982b). The study of human operant behavior, 1958–1981: A topical bibliography. *The Psychological Record, 32,* 249–268.

Buskist, W., Sherburne, T. R., & Critchfield, T. S. (1996). A home for operant research: Contributions of *The Psychological Record. Experimental Analysis of Human Behavior Bulletin, 14,* 4–6.

Critchfield, T. S., Buskist, W., Crockett, J., Sherburne, T., & Keel, K. (2000). Sources cited most frequently in the experimental analysis of human behavior. *The Behavior Analyst, 23,* 255–266.

Critchfield, T. S., Newland, M. C., & Kollins, S. H. (2000). The good, the bad, and the aggregate. *The Behavior Analyst, 23,* 107–115.

Dougher, M. (1999). *Clinical behavior analysis.* Reno, NV: Context Press.

Dougherty, D. M. (1994). The selective renaissance of the experimental analysis of human behavior. *The Behavior Analyst, 17,* 169–174.

Dunlap, G., Clarke, S., & Reyes, L. (1998). An analysis of trends in *JABA* authorship. *Journal of Applied Behavior Analysis, 31,* 497–500.

Dymond, S. (1997). International publication trends in the experimental analysis of behavior. *The Behavior Analyst, 20,* 109–119.

Dymond, S., Clarke, S., Dunlap, G., & Steiner, M. (2000). International publication trends of *JABA* authorship. *Journal of Applied Behavior Analysis, 33,* 339–342.

Dymond, S., & Critchfield, T. S. (in press). A legacy of growth: Human operant research in *The Psychological Record,* 1980–1999. *The Psychological Record.*

Dymond, S., & Rehfeldt, R. A. (2000). Understanding complex behavior: The transformation of stimulus functions. *The Behavior Analyst, 23,* 239–254.

Hake, D. F. (1982). The basic-applied continuum and the possible evolution of human operant social and verbal research. *The Behavior Analyst, 5,* 21–28.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition.* New York: Plenum.

Hayes, S. C., & Hayes, L. J. (1992). Verbal relations and the evolution of behavior analysis. *American Psychologist, 47,* 1383–1395.

Higgins, S. T., & Hughes, J. R. (1998). Human behavioral pharmacology: An overview of laboratory methods. In K. A. Lattal & M. Perone (Eds.), *Handbook of research methods in human operant behavior* (pp. 579–618). New York: Plenum.

Hyten, C., & Reilly, M. P. (1992). The renaissance of the experimental analysis of human behavior. *The Behavior Analyst, 15,* 109–114.

Hyten, C., & Reilly, M. P. (1994). Reply to Dougherty: On measuring content diversity in the experimental analysis of human behavior. *The Behavior Analyst, 17,* 175–176.

Johnston, J. M. (1983). EAHB Special Interest Group: A brief history. *Experimental Analysis of Human Behavior Bulletin, 1,* 1.

Kollins, S. K., Newland, M. C., & Critchfield, T. S. (1999). Quantitative integration of single-subject studies: Methods and misinterpretations. *The Behavior Analyst, 22,* 149–157.

Lattal, K. A. (1999). Where in the world is "Revista Mexicana de Analisis de la Conducta"? *Revista Mexicana de Analisis de la Conducta, 25,* 279–289.

Lattal, K. A., & Perone, M. (1998). *Handbook of research methods in human operant behavior.* New York: Plenum.

Leigland, S. (1998). The methodological challenge of the functional analysis of verbal behavior. *The Analysis of Verbal Behavior, 15,* 125–127.

Leslie, J. C., & Blackman, D. (2000). *Experimental and applied analyses of human behavior.* Reno, NV: Context Press.

Malott, M. E., Davison, M., & Sato, M. (1999). A history of international development at ABA. *The Association for Behavior Analysis Newsletter, 22* (3), 4–6.

Miller, H. L. (1983). More than promissory? Reflections on the once and future experimental analysis of human behavior. *The Psychological Record, 33,* 551–564.

Moderato, P. (1998). Behavior analysis in Italy. *Revista Mexicana de Analisis de la Conducta, 24,* 67–78.

Nevin, J. A. (1982). Editorial. *Journal of the Experimental Analysis of Behavior, 37,* 1–2.

Normand, M. P., Fossa, J. F., & Poling, A. (2000). Publication trends in *The Analysis of Verbal Behavior*: 1982–1998. *The Analysis of Verbal Behavior, 17,* 167–173.

Perone, M. (1985). On the impact of human operant research: Asymmetrical patterns of cross-citation between human and nonhuman research. *The Behavior Analyst, 8,* 185–189.

Pilgrim, C. (1998). The human subject. In K. A. Lattal & M. Perone (Eds.), *Handbook of research methods in human operant behavior* (pp. 15–44). New York: Plenum.

Redmon, W. K., & Lockwood, K. (1986). The matching law and organizational behavior. *Journal of Organizational Behavior Management, 8,* 57–72.

Schmitt, D. (1995). The experimental study of social behavior: The past and the future. *Experimental Analysis of Human Behavior Bulletin, 13,* 8–11.

Vollmer, T. R., & Bourret, J. (2000). An application of the matching law to evaluate the allocation of two- and three-point shots by college basketball players. *Journal of Applied Behavior Analysis, 33,* 137–150.

Vuchinich, R. E., & Tucker, J. A. (1998). Choice, behavioral economics, and addictive behavior patterns. In W. R. Miller & N. Heather (Eds.), *Treating addictive behaviors* (2nd ed., pp. 93–104). New York: Plenum.

Zentall, T. R., & Smeets, P. M. (1996). *Stimulus class formation in humans and animals.* Amsterdam: Elsevier.