

How Has Applied Behavior Analysis and Behavior Therapy Changed?: An Historical Analysis of Journals

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Applied behavior analysis and behavior therapy are now nearly a half century old. It is interesting to ask if and how these disciplines have changed over time, particularly regarding some of their key internal controversies (e.g., role of cognitions). We examined the first five years and the 2000-2004 five year period of the *Journal of Applied Behavior Analysis (JABA)* and *Behavior Therapy (BT)* and found: 1) a doubling of the use of DSM diagnostic categories for both, with studies published in *BT* using these in a majority (51%) of titles; 2) a significant increase of studies published in *JABA* focusing on developmental disabilities (from 24.7% to 61.8%), but no such increase or predominate focus in *BT*; 3) a significant decrease in *BT* explicitly focusing on behavioral principles (51.8% to 12.5%) with *JABA* showing a sustained focus on behavioral principles (100% and 100%); and finally, 4) studies published in *JABA* showing little interest in studying newer behavioral conceptualizations (10.8%) in the 2000-2004 five-year period. Implications for the field are discussed and further discussion is encouraged. Keywords: applied behavior analysis, behavior therapy, behavioral principles, JABA, Behavior Therapy

Philosophers of science have suggested that disciplines can change over time. Sometimes there are sudden and dramatic scientific revolutions and sometimes the change is more gradual (Kuhn, 1970; Popper, 1959). However, there have been few studies or comments about changes and the historical consistencies in the behavioral therapies. By "behavioral therapies" we mean applied behavior analysis, behavior therapy, and cognitive behavior therapy. *JABA* is typically regarded as the leading journal of applied behavior analysis, and *BT* as the premier journal of behavior therapy. These therapies are nearly a half century old, practiced by a different generation of individuals (arguably the third generation). Therefore, questions arise regarding how, if at all, behavioral therapies have changed over time. What similarities and differences exist between these two branches of behavioral therapies? This sort of intellectual activity is generally construed as "meta-science" and seeks to provide a look at the behavior of scientists to see if anything interesting can be gleaned from this perspective (Radnitzky, 1973).

Moreover, there have been some long standing and significant controversies within these therapies. It is interesting to track changes in publication rates with respect to these controversies. Although there are a number of controversies, we chose four. One such controversy is related to "the medical model" and specifically the use of diagnoses in the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 1994). Criticisms of this practice have been long standing (see Krasner & Ullmann, 1965) and more current (e.g., Follette & Hayes, 1992). Critics have claimed that there is a fundamental inconsistency between a behavioral, functional description, and the topographical, symptom checklist, clusters of behavior thought to underlie DSM diagnostic categories. Proponents of the DSM categorization have ranged from the pragmatic (e.g., some agencies rely heavily on it for grant funding) to more positive appraisals of its potential utility in research and practice (e.g., Blashfield & Draguns, 1976; Spitzer, 1999). To what extent has the DSM influenced research in the behavior therapies, and has this changed over time? One way to measure this is to examine the use of DSM categories in journal titles (e.g., Panic Disorder with Agoraphobia), vs. other problem descriptions that do not use DSM diagnostic terminology (e.g., head banging).

Another, more recent concern has been that behavior analysis has narrowed its focus, particularly in applied areas (Hayes, 2001). There is a long standing tradition of behavior analytic focus and significant success with the developmentally disabled population. However, it can be argued that this has

artificially restricted behavior analysis from other important problem behaviors (e.g., obesity, depression) that are socially important, unsolved, and have significant grant and career opportunities for behaviorally inclined clinicians and researchers. For example, Friman, Hayes, and Wilson (1998) suggested behavior analysts should study emotion and provided implications for the understanding of anxiety. To what extent does behavior analysis focus on the developmentally disabled vs. other populations, and has this changed over time?

Another controversial issue is that there has been a flight away from process, by moving away from studying explicit process variables to studying large eclectic mixes of therapy techniques. These techniques are often summarized as packages that may vary across studies (e.g., anger control training, or social skills therapy) or are expressed by acronym packages such as Dialectical Behavior Therapy (DBT; Linehan, 1993), Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991) or Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). Has there been a change in frequency of studies explicitly studying behavioral principles from first generation to current generation behavior therapy?

Lastly, nearly three decades ago, Pierce and Epling (1980) worried that applied behavior analysis has lost touch with the experimental analysis of behavior. This is made apparent by behavior analysts' use of older, more traditional behavioral conceptualizations such as the three term contingency, shaping, punishment, (all discovered pre-1960) etc. as opposed to newer conceptualizations such as the matching law, adjunctive behavior, stimulus equivalence, behavioral momentum, and behavioral economics. Pierce and Epling (1980) found that:

In our review of *JABA* we were struck by the constant repetition of studies that call on only the most elementary principle of behavior, the law of effect. This principle is demonstrated on numerous and diverse behaviors, in different settings and with different subject populations. These articles, taken together, seem to state 'the law of effect works'. One can imagine an equivalent development in the science of physics. If Galileo had started an applied journal there may have been numerous articles that demonstrated the law of gravity held for a) various angles of inclined planes, b) inclined planes composed of different substances, and c) diverse balls varying in the size and mass. The journal could have been called the Journal of Applied Gravities as the current *JABA* could be redesignated the Journal of Applied Law of Effects. (p. 6)

Has there been much change in the practice of using older behavioral conceptualizations in more contemporary publications? Are behavioral researchers "stuck" on these older conceptualizations or are they using more contemporary conceptualizations? What evidence is there for Pierce and Epling's provocative rhetorical claim that *JABA* simply catalogs successes of the law of effect?

There have always been questions regarding the similarities and differences between applied behavior analysis and behavior therapy. They seem to be related but also distinct in certain regards. For example, O'Donohue and Houts (1985) examined *JABA* and *Cognitive Therapy and Research (CTR)* and found that *JABA* used single subject experimental designs 72% of the time, while *CTR* used these methods 1% of the time. Group designs were used 92% of the time in *CTR*. Thus, the authors concluded that cognitive behavior therapy and applied behavior analysis differ in terms of their methodological preferences. This is one example of the type of difference that may exist between the areas of applied behavior analysis and behavior therapy. The four questions posed above will be examined for both disciplines to attempt to discern further similarities and differences.

A goal of the current paper is to provide a historical analysis of applied behavior analysis and behavior therapy. This will be accomplished by looking at the initial practices of each of the prominent journals in these areas and evaluate how they have changed over time by comparing them to a more

recent time period. Specific questions will evaluate the usage of diagnostic terminology, the frequency of studying individuals with developmental disabilities, studies that explicitly study behavioral principles, and lastly studies that use conceptualizations from modern basic behavioral science.

METHOD

Journal Selection

JABA and *BT* were evaluated along three dimensions, with *JABA* being evaluated along one additional dimension. These journals were selected for analysis because they represent the leading journals in applied behavior analysis and behavior therapy, respectively.

Content Analysis

The criteria below were used to evaluate *JABA* and *BT* during the first five years (1968-1972 for *JABA*; 1970-1974 for *BT*) and the 2000-2004 five year period of publication for each journal. These time periods were chosen in an attempt to identify any changes from the initial to more recent periods in the two journal's histories. Given that the two journals started at different points in time, the exact five years evaluated for the initial five year period were not the same. Our primary goal was to compare the initial practices of each journal to more contemporary practices, thus the first five years of each were evaluated despite being different points in time.

DSM Diagnoses. This measure represents the overall percentage of article titles containing DSM-IV (American Psychiatric Association, 1994) diagnoses during each five year period. Anytime a specific disorder (e.g., "autism") or a reference to a collectivity of disorders (e.g., "depression") was used in a title an instance of using DSM diagnoses was counted. Only titles were evaluated for DSM terminology; thus it is possible that studies included DSM terminology in the title but studied specific behaviors. The percentage was calculated by dividing the frequency of titles with DSM diagnoses by the overall number of titles for each five year period and multiplying by 100.

Population Studied. This measure represents the overall percentage of articles including individuals with development disabilities (including individuals with autism) vs. the percentage of articles focusing on other populations during each five year period. If one or more of the participants in the study was identified as having a developmental disability an instance of studying individuals with developmental disabilities was counted. The percentage was calculated by dividing the frequency of articles studying each type of population by the overall number of studies and multiplying by 100.

Behavioral Principles. This measure represents the overall percentage of articles that explicitly stated the use of specific behavioral principles or processes regardless of the number of principles involved. When procedures were used that described the use of behavioral principles (e.g., using differential reinforcement, shaping, etc.) an instance of using behavioral principles was counted. Other examples of using behavioral principles include functional analysis (i.e., exposing behavior to various contingencies of reinforcement) and reinforcer assessment studies. Studies that did not reference behavioral principles were not counted. Examples of these include studies on cognitive restructuring or thought stopping. Behavioral principles are certainly involved in these studies, however, if they were not explicitly described in the manuscript the study was not counted as an instance of studying behavioral principles. The percentage was calculated by dividing the frequency of articles examining behavioral principles by the overall number of articles and multiplying by 100.

Use of Contemporary Conceptualizations. This measure represents the overall percentage of articles in *JABA* focusing on early behavioral conceptualizations (e.g., reinforcement, extinction,

punishment, etc.) vs. those utilizing contemporary conceptualizations (e.g., matching law, adjunctive behavior, self-control, etc.). Table 1 displays a number of examples of early and contemporary conceptualizations. The percentage was calculated by dividing the frequency of studies that included contemporary conceptualizations by the overall number of articles and multiplying by 100.

Table 1. *Examples of Early and Contemporary Conceptualizations in Behavior Theory*

| Early Conceptualizations | Contemporary Conceptualizations |
|--|---------------------------------|
| Reinforcement | Behavioral Momentum |
| Punishment | Behavioral Economics |
| Schedule Manipulations | Matching Law |
| Extinction | Establishing Operations |
| Classical Conditioning | Adjunctive Behavior |
| Avoidance | Self-Control |
| Verbal Behavior (i.e., Skinner’s Analysis) | Stimulus Equivalence |
| Shaping | Relational Frame Theory |

Interobserver Agreement

Point-by-point interobserver agreement was calculated to assess the reliability of data collection. An agreement was defined as both observers obtaining the same frequency on a given measure for a specific year. Agreement was assessed for all of the articles and was 96%.

RESULTS

Figure 1 depicts the results of the DSM evaluation for both *JABA* and *BT*. During the first five year period 8.8% of the articles in *JABA* included DSM terminology, with 16.9% doing so during the 2000-2004 five year period. In *BT* 24.9% of the titles included DSM terminology during the first five year period, with 51% doing so during the 2000-2004 five year period. Thus, an increase in the use of DSM terminology was found in both journals. This increase approximately doubled for both journals, with *BT* consistently publishing a higher percentage of articles (approximately triple) during each five year period.

DSM Diagnoses in Titles

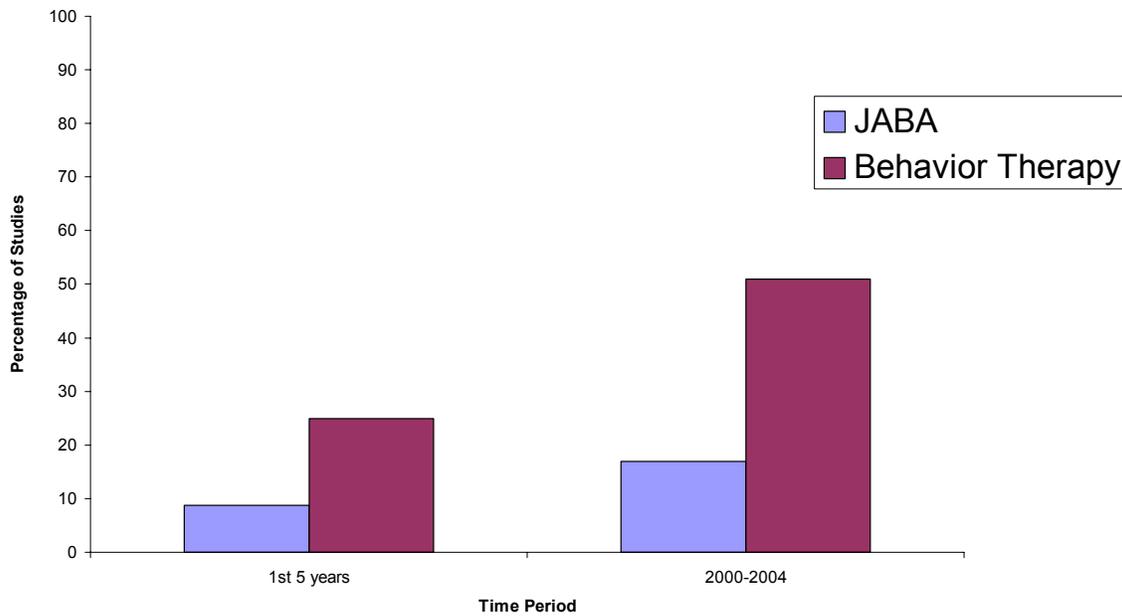


Figure 1. Data from the first five years and the 2000-2004 five year period for the percentage of article titles using DSM terminology for *JABA* and *BT*.

The results of the population evaluation are displayed on figures 2 and 3. Figure 2 depicts the results of the population evaluation for *JABA*. During the first five years of publication 24.7% of articles in *JABA* included individuals with developmental disabilities, with an increase to 61.8% during the 2000-2004 five year period. Figure 3 displays the results of the population studied evaluation for *BT*. During the first five year period 8% of the articles in *BT* included individuals with developmental disabilities, with 2.7% of the articles doing so during the 2000-2004 five year period. Thus, a relatively large increase in the percentage of studies including individuals with developmental disabilities was found when comparing the two five year periods for *JABA*. In contrast, a low percentage of articles included individuals with developmental disabilities during both five year periods in *BT*.

JABA Population

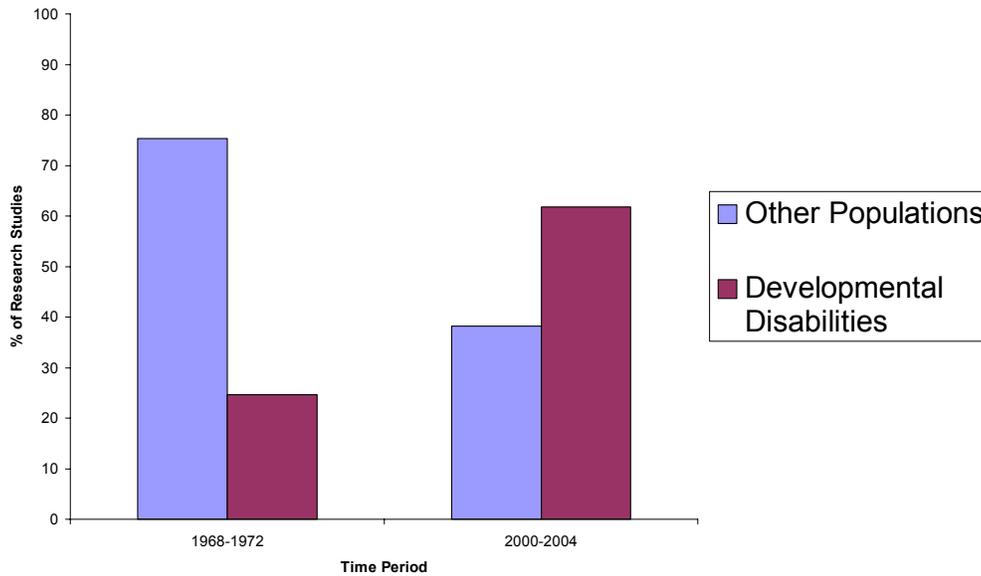


Figure 2. Data from the 1968-1972 and the 2000-2004 five year period for the percentage of articles including individuals with developmental disabilities vs. the percentage of studies that did not in *JABA*.

BT Population

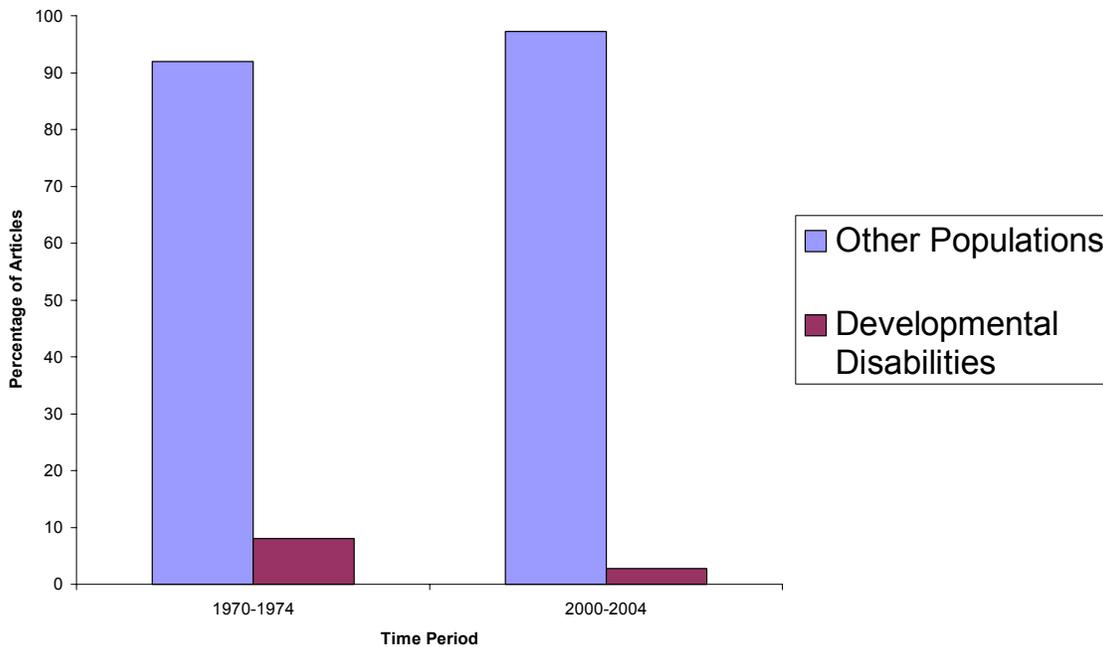


Figure 3. Data from the 1970-1974 and the 2000-2004 five year period for the percentage of articles including individuals with developmental disabilities vs. the percentage of studies that did not in *BT*.

The data for the behavioral principles evaluation are displayed in figure 4. During both of the five year periods all of the research in *JABA* explicitly described the behavioral principles under

investigation. In contrast, 51.8% of the studies in *BT* explicitly stated the behavioral principles under investigation during the first five year period, with a decrease to 12.5% during the 2000-2004 five year period. Thus, a large decrease in studies that specified the behavioral principles under investigation was found in *BT* when comparing early and contemporary practices.

Behavioral Principles

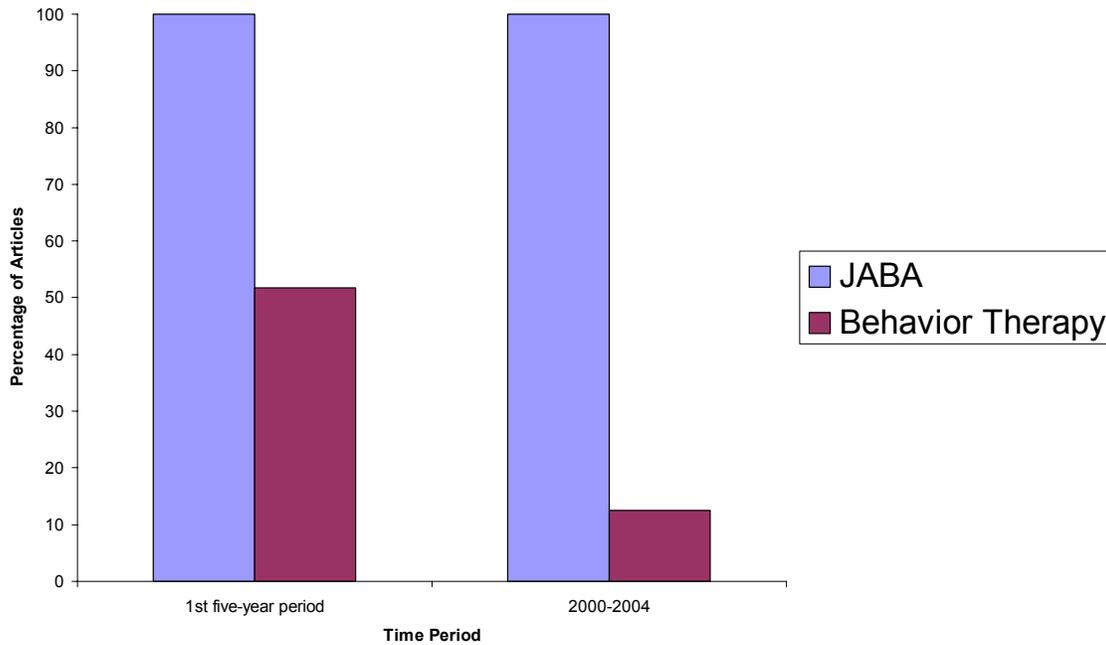


Figure 4. Data from the first five year period and the 2000-2004 five year period for the percentage of studies that explicitly referred to/studied behavioral principles for *JABA* and *BT*.

Figure 5 depicts the results of the use of contemporary conceptualizations evaluation. During the first five year period 100% of the articles in *JABA* focused on early conceptualizations, with 89.2% doing so during the 2000-2004 five year period. In other words, 10.8% of the articles in *JABA* studied contemporary conceptualizations or procedures during the 2000-2004 five year period.

JABA Early vs. Contemporary Conceptualizations

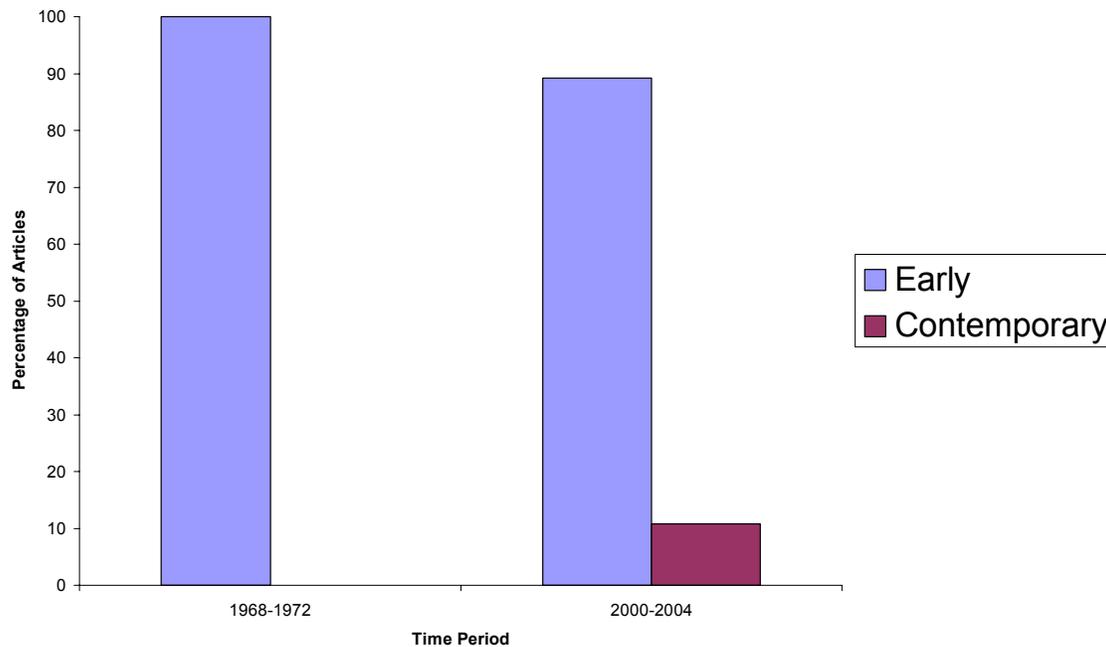


Figure 5. Data from the 1968-1972 and 2000-2004 five year periods for the percentage of articles studying and/or referring to contemporary conceptualizations in *JABA*.

DISCUSSION

As predicted, *BT* had much higher frequencies of DSM criteria in the titles of articles. Both journals showed a significant increase, but behavior therapy has adopted DSM diagnoses roughly three times as often as applied behavior analysts. We speculate that part of the reason for this increase may be the acceptance of the DSM by the establishment that affects science, such as grant funding agencies. However, to the extent that the critics are correct, this move is not without costs.

These data should be interpreted in light of a number of potential limitations. The first being that only titles of journal articles were evaluated, making it possible that the increase in using DSM terminology has little to do with the research but rather the phrasing of the titles of research manuscripts. Secondly, there has been an increase in the number of DSM terms in recent years, and this may account for the increase in using DSM terminology. Although the same version of the DSM was used for both time periods it is unlikely that this confounded the results of the evaluation in any significant way (especially given the large differences found). It is also possible that these changes represent changes in editorial requirements that encourage researchers to specify the population described in diagnostic terminology.

Again as predicted, *JABA* has conducted much more research in the area of developmental disabilities in comparison to *BT*. Thus, applied behavior analysis can be seen as a discipline with much interest in developmental disabilities, with behavior therapy having little and decreasing interest in this area over time. This is another differentiator between the two behavioral therapies. It is interesting to speculate whether behavior analysis' focus has become too narrow, given the unsolved problems in socially important areas like gerontology, behavioral medicine, and other high frequency clinical

problems such as depression. This has huge implications for the scope of the field of applied behavior analysis, which currently may be overly narrow.

A number of factors could have accounted for the results of the population studied evaluation. Although an increase in the percentage of studies with individuals with developmental disabilities was found in *JABA*, it is possible that applied behavior analysts are conducting research in other areas but simply not publishing in *JABA*. A number of other journals publish behavior analytic work and these may be outlets for publication in other areas. In addition, the editorial staff of *JABA* may account for increased focus on certain populations. More specifically, editors with interests in specific areas and populations may facilitate the publication of this work in *JABA*. This may have resulted in a decrease in submissions of manuscripts focusing on other areas. This was not accounted for in the current evaluation, but certainly may function as a variable attributing to differences found. In spite of these potential limitations, the shift in focus is noteworthy when comparing *JABA* and *BT*.

The hypothesis that *BT* has lost a focus on explicitly studying behavioral principles (i.e., research that directly studies specific behavioral principles) as opposed to larger treatment packages that do not focus on specific principles was supported by the data. Thus, there may be a flight from process in behavior therapy, while focusing more on outcome studies of larger packaged treatments. This may be due to the fact that single component processes are seen as insufficient to produce good outcomes. Furthermore, single component processes may be especially insufficient when working with adults that have common mental health problems (e.g., depression). However, at a minimum two things need to be noted: this has increased significantly over time; and behavior analysis has not undergone a similar change.

These results may be the result of fundamental differences in the goals and values of the respective journals. More specifically, *JABA* may value the precise description of behavioral principles, procedures, etc. more than *BT*. In fact, articles that do not explicitly state behavioral principles being studied and the exact way they are being studied may not be acceptable to *JABA* editors and readers. Thus, the differences obtained in this evaluation may represent fundamental differences in the practices of the two journals. It is also important to note that research in *BT* certainly involves behavioral principles, but that these principles are not always explicitly referred to and/or studied as they are in *JABA*. There is no doubt that behavioral principles are being used in the investigations published in both journals. The difference is the explicit focus on these principles and/or description of them in the research manuscript.

Lastly, we evaluated the extent to which *JABA* is studying newer behavioral conceptualizations (i.e., is the law of effect and the three term contingency still the main line of research?). Thus, our hypothesis that the vast majority of research in *JABA* is still devoted to investigating older behavioral principles was supported. An obvious limitation of this evaluation is that contemporary procedures were not developed during the first five years of publication. Thus, it would not be reasonable to expect research to examine these conceptualizations. It is possible that the 10.8% of studies using contemporary conceptualizations during the 2000-2004 five year period reflects a slow and steady increase in studies examining these conceptualizations. It is worth clarifying that principles of reinforcement are involved in both old and new conceptualizations. The results display the percentage of studies that referenced relatively modern conceptualizations of how behavioral principles operate.

General Conclusions

We do not want to present sustained argument about whether the findings above are “good” or “bad”, particularly as there are a number of issues and the complete arguments would be rather complex. Instead we do hope to initiate attention to these findings and encourage discussion and elaboration on

these issues. Our belief is that it is a problem if these issues are largely unnoticed. We think future discussion can cover questions such as:

1. What are the advantages and disadvantages of an increased reliance on DSM diagnostic categories? How can any disadvantages be mitigated?
2. Does behavior analysis have too narrow of a focus on developmental disabilities? What is responsible for this? How is it problematic and how is it good? How can any problematic aspect be changed?
3. What are the disadvantages and advantages of behavior therapy's drift from the explicit study of behavioral principles, what is lost, if anything, in understanding process? What can be done to mitigate this?
4. Why does behavior analysis seem to focus on older conceptualizations of behavioral principles? Are these over-researched as Pierce and Epling (1980) have argued? Does this hurt the field? Is there something about more contemporary conceptualizations that make them less interesting, relevant, or effective for clinical problems?
5. What can the two disciplines learn from each other? What exactly is the nature of their relationship?

We have identified some clear changes in these two fields. Although this evaluation was not comprehensive in the sense that only two five year periods were evaluated we believe these findings are important. These changes are, we believe, significant, and deserve attention, comment and debate as they have implications for the future of the field. We hope this article can facilitate future discussion and evaluation of these issues.

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