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NOTE: Prior to Volume 16, Number 1 (Spring 2013) the *Journal of Behaviorology* went by the name of *Behaviorology Today*, which occasionally published fully peer-reviewed articles, explicitly so labeled. Beginning with Volume 15, Number 1, in January 2012, *all* material receives full peer review. See the "Submission Guidelines" for details.

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* This issue does not contain any new or updated TIBI course syllabi. New syllabi, or updates of previous syllabi, may appear in future issues. (See the *Syllabus Directory* for details.)

Editorial

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This issue of *Journal of Behaviorology* (JoB) contains two articles outlining important disciplinary, organizational, and educational advancements within behaviorology generally and The International Behaviorology Institute (TIBI) specifically.

First, James O’Heare provides a consolidated and updated overview of TIBI’s educational offerings. These include the Institute’s six primary Certificates (from the Behavior Literacy Certificate to the Doctoral Level Behaviorology Certificate), its four additional Certificates (for instance, the Animal Training and Verbal Behavior Certificates), and the seventeen courses that comprise these Certificates. (For concise syllabi and descriptions of the recently revised versions of the thirteen original TIBI courses and the four newer courses, see O’Heare’s articles in the Fall, 2016 and Spring, 2017 issues of this journal; these syllabi work in conjunction with O’Heare’s [2015] parameters and procedures article).

Next, Stephen Ledoux and James O’Heare provide a detailed account of the history of Behaviorology spanning the years 1990 to 2014. The authors describe significant events and highlight various triumphs and tribulations faced by the discipline in its evolution through those crucial years. Ledoux’s comments from the “front lines” are particularly captivating. The second part to this paper, appearing in the next issue of this journal (Fall 2018) will extend Ledoux and O’Heare’s account to include educational advances in the development of university-level programming and animal training curricula, list significant behaviorological works published in the time frame, and describe additional behaviorological developments.

This is the first issue of the *Journal of Behaviorology* for which I have served as Editor. I thank past Editor James O’Heare and Managing Editor Stephen Ledoux for the many things they have done to help me ease into the role. It is an honor to be appointed Editor of a journal that has, in my humble estimation, published some of the most significant scientific papers ever produced. By “significant,” I mean *potentially world-changing*, an assertion that will sound unwarranted and arrogant to many, but one which many readers of this journal will undoubtedly appreciate and support.

One of my primary goals as Editor is to work with others to maintain JoB’s high standards, and one of my primary duties is to recruit manuscripts for publication. In view of these goals and duties, I must second O’Heare’s (2016) editorial statement that, in the light of JoB’s illustrious publication history, prospective authors “may exhibit behaviours we might tact as reluctance and intimidation as they follow contributions from such prolific authors as Lawrence Fraley and Stephen Ledoux” (p. 2). I can indeed understand why some may (to put it in everyday terms) feel intimidated at the thought of submitting a manuscript to JoB, and I likely speak for many readers when I ponder my chances of being able to produce anything of “world-changing” quality. However, perhaps it will help potential authors overcome any reluctance to submit by reiterating O’Heare’s observation that publication in our fully peer-reviewed journal “can generate a number of short and long term reinforcement opportunities,” including the fact that authors retain rights to their JoB publications (thus leaving the door open for publication elsewhere). It may also be helpful to note that “[t]he editorial team is [still] standing by, ready to assist authors with topic selection and the honing of textual products.” Your manuscript may or may not be designed to change the world, and it may be something you have already produced for non-publication purposes (e.g., for your practice), but please do not hesitate to send it our way...; we are happy to help you in shaping it into something that meets your own high standards! For details on the various aspects of publishing in JoB, please see the Submission Guidelines on page 31 of this issue, or email me (brucehamm@me.com) or any member of the Editorial team (i.e., the Board of Directors of TIBI under CONTACTS at www.behaviorology.org).✧

References:

- O’Heare, J. (2015). General parameters and procedures for courses from The International Behaviorology Institute. *Journal of Behaviorology*, 18 (2), 3–6.
- O’Heare, J. (2016). Editorial. *Journal of Behaviorology*, 19 (1), 2.✧

The International Behaviorology Institute Updated Certificate Programs

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Abstract: The International Behaviorology Institute (TIBI) has sponsored six primary certificates since it was founded in 1997 (see Board of Directors, 1999). Subsequently, additional certificates were added. With the updating of TIBI’s original 13 courses, and the addition of four new courses, the associated updating of its certificates is in order. Topics relating to these certificates, and covered herein, include TIBI education, courses, enrollment, and some frequently asked questions (FAQs).

The International Behaviorology Institute (TIBI) has provided certificate programs, covering various components and levels of behaviorological repertoire, since its early days (see Board of Directors, 1999). To ensure that behaviorology makes its full contributions to humanity, society needs many more behaviorologists with appropriate and preferably complete training. Part of TIBI’s purposes involves helping achieve this goal.

TIBI Education

As a TIBI Board member, Stephen Ledoux made the suggestion (personal communication)—and this author agrees—that, in this certificate–program update, this author retain much of the phrasing of Ledoux’s original, and accepted, drafting of TIBI’s certificate programs, because this phrasing still applies as TIBI Policy (see Board of Directors, 2002). TIBI, which here we sometimes simply call “the Institute,” operates within the framework of North American higher education. This system has the four basic degree levels, or their equivalents, of Associate, Baccalaureate, Masters, and Doctorate. Within this overall structure, the Institute offers a range of certificate programs. The organization of these programs stresses the importance of using the instructional design and technology derived from behaviorological science, and the administrative contingency arrangements supported by this science, in the teaching of the comprehensive behaviorology discipline.

The Institute’s programs are designed to deliver comprehensive educational training in both the foundations of behaviorology and the practices of behaviorologists. The programs serve a number of audiences including (a) those who wish only to fulfill

a Behavior Literacy graduation requirement, (b) those who are majoring in behaviorology at the AA, BA, or graduate level, and (c) those professionals who are working or studying in one or another human service, human development, or nonhuman behavior field where behaviorology is the most effective natural science informing their work.

By design the certificate programs incorporate scientifically sound instructional design components including (a) requiring students to meet established criteria, (b) allowing students to complete courses at their own pace, and (c) encouraging students to begin their next course immediately, without reference to calendar terms. The courses, and the contents of courses, required for each of these certificates will evolve as behaviorology itself evolves (hence these program descriptions are subject to change).

TIBI Primary Certificates

While earlier descriptions of the certificates described herein contain additional pertinent information (e.g., see Ledoux, 1990/2015; also see Board of Directors, 2002), TIBI provides six primary certificate programs of study in behaviorology corresponding to the typical academic progression through college or university programs from a basic “literacy” certificate through to the doctoral level. TIBI also provides four further certificate programs of study in specialized topics for professionals in applied behavior fields.

The Institute operates as an independent, non–profit educational corporation; it is not chartered to grant “degrees” and so does not attempt to do so. As such, the validity and significance of the Institute’s educational

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Key words: behaviorology, education, natural–science curricula

efforts, and hence certificates, are to be evaluated on the basis of (a) the correspondence between the Institute's courses and the equivalent courses at more formally accredited colleges and universities (see Ledoux, 2015), and (b) the success of the research and application skills of its graduates. These are initially implied by the certificate levels that the graduates have attained.

The Institute provides educational coursework leading to these six primary behaviorology certificates:

- ✧ The Behavior Literacy Certificate (BLC)
- ✧ The Associate of Behaviorology Certificate (ABC)
- ✧ The Baccalaureate Level Behaviorology Certificate (BLBC)
- ✧ The Professional Studies in Behaviorology Certificate (PSBC)
- ✧ The Masters Level Behaviorology Certificate (MLBC)
- ✧ The Doctoral Level Behaviorology Certificate (DLBC)

The BLC, ABC, and BLBC are undergraduate-level certificates. The PSBC, MLBC, and DLBC are graduate-level certificates.

The Institute has also added educational coursework leading to these four more specialized behaviorology certificates, and may add more in the future:

- ✧ Animal Training Certificate (ATC)
- ✧ Animal Behavior Technology Certificate (ABTC)
- ✧ Effective Autism Intervention Certificate (EAIC)
- ✧ Verbal Behavior Certificate (VBC)

Several certificates share various courses. Here are some details for each certificate:

BLC (Behavior Literacy Certificate)

The Behavior Literacy Certificate (BLC) introduces basic terminology, principles, methods, and concepts of behaviorology, and includes a foundational course that applies the basics to an area that affects most people. The BLC is suited to anyone who seeks a basic but solid foundational appreciation of the natural science of behavior. This certificate includes these requirements:

- Prerequisite: High school diploma or equivalent
 BEHG 100 Child Rearing Principles and Practices
 BEHG 210 Introduction to Behaviorology I
 BEHG 211 Introduction to Behaviorology II

ABC (Associate of Behaviorology Certificate)

The Associate of Behaviorology Certificate (ABC, or simply "Associate Certificate") features course-load requirements that parallel the course-load requirements of a major in a typical college AA (Associate of Arts) degree program. This certificate includes these requirements:

- Prerequisite: BLC or equivalent
 BEHG 110 Introduction to Behaviorology Terminology
 BEHG 330 Companion Animal Training
 BEHG 350 Behaviorology Philosophy and History
 BEHG 405 Basic Autism Intervention Methods

BLBC (Baccalaureate Level Behaviorology Certificate)

The Baccalaureate Level Behaviorology Certificate (BLBC, or simply "Baccalaureate Certificate") lays a strong foundation both for entry-level employment, in fields where behaviorology is the appropriate foundation science, and for further, graduate-level studies in behaviorology. The course-load requirements of this certificate parallel the course-load requirements of a strong major in a typical college or university BA (Bachelor of Arts) or BS (Bachelor of Science) degree program in a natural science. This certificate includes these requirements:

- Prerequisite: ABC or equivalent
 BEHG 340 Introduction to Verbal Behavior
 BEHG 425 Classroom Management and Preventing School Violence
 BEHG 455 Behavioral Thanatology and Dignified Dying
 BEHG 480 Green Contingency Engineering
 BEHG Elective
 BEHG Elective
 BEHG Elective
 BEHG 541 Advanced Verbal Behavior [As is commonly accepted, a graduate-level course or two is allowed at the end of a Bachelor-level program sequence.]

PSBC (Professional Studies in Behaviorology Certificate)

The PSBC (or simply the "Professional Certificate") contains the training with which non-behaviorological professionals, who already hold bachelor-level education in another discipline or field, may enhance their professional contributions by adding to their repertoires a solid foundation in behaviorological science and its relevance to their own area. This certificate includes these requirements:

- BEHG 100 Child Rearing Principles and Practices
 BEHG 110 Introduction to Behaviorology Terminology
 BEHG 210 Introduction to Behaviorology I
 BEHG 211 Introduction to Behaviorology II
 BEHG 350 Behaviorology Philosophy and History
 BEHG Elective
 BEHG Elective
 BEHG 512 Advanced Behaviorology I
 BEHG 513 Advanced Behaviorology II

MLBC (Masters Level Behaviorology Certificate)

The Masters Level Behaviorology Certificate (MLBC, or simply “Masters Certificate”) is the minimal foundation for professional-level activity as a behaviorologist while also providing the foundation for further graduate-level studies in behaviorology. The course-load requirements of this certificate parallel the course-load requirements of a typical, one-year, 30-credit, thesis-based, university MA (Master of Arts) or MS (Master of Science) degree program (with the thesis or project worth six credits, bringing the program total to 30). This certificate includes these requirements:

Prerequisite: BLBC or equivalent, or BLC plus BEHG 340 Introduction to Verbal Behavior, BEHG 350 Behaviorology Philosophy and History, and BEHG 455 Behaviorological Thanatology and Dignified Dying
BEHG 512 Advanced Behaviorology I
BEHG 513 Advanced Behaviorology II
BEHG 541 Advanced Verbal Behavior
BEHG Elective
BEHG Elective
BEHG Elective
BEHG Elective
BEHG Elective
Master’s level thesis or project

DLBC (Doctoral Level Behaviorology Certificate)

The Doctoral Level Behaviorology Certificate (DLBC, or simply the “Doctoral Certificate”) is another program of more advanced behaviorology training. This program is the full foundation for professional-level activity as a behaviorologist. The course-load requirements of this certificate parallel the course-load requirements of a typical university doctoral degree program.

The components of doctoral-level programs are individually tailored to each professional’s background and circumstances, but must include a doctoral level dissertation project contracted through a committee of three TIBI faculty professors. Ultimately the resulting report must be published as a substantive article in a peer reviewed journal, such as *Journal of Behaviorology*, or as a professional-level book.

TIBI Specialty Certificates

TIBI provides some specialty certificate programs of study in specialized topics for professionals in behavior applicable fields. Additional specialty certificates may be developed in the future. Here are TIBI’s four current specialty certificates:

ATC (Animal Training Certificate)

The Animal Training Certificate (ATC) lays a strong foundation of coursework in behaviorological terminology, principles of behavior, and applications of the principles to the field of training animals, including dogs, cats, horses, and parrots, and covers both academic and hands-on skills. This certificate includes these requirements:

BEHG 110 Introduction to Behaviorology Terminology
BEHG 210 Introduction to Behaviorology I
BEHG 211 Introduction to Behaviorology II
BEHG 330 Companion Animal Training

ABTC (Animal Behavior Technology Certificate)

The Animal Behavior Technology Certificate (ABTC) lays a strong foundation of coursework in behaviorological terminology and principles of behavior, applications of the principles to training companion animals and working with animals and clients to resolve problematic animal behaviors. This certificate includes these requirements:

BEHG 110 Introduction to Behaviorology Terminology
BEHG 210 Introduction to Behaviorology I
BEHG 211 Introduction to Behaviorology II
BEHG 330 Companion Animal Training
BEHG 350 Behaviorology Philosophy and History
BEHG 430 Resolving Problem Animal Behavior
BEHG 435 Performance Management and Preventing Workplace Violence

EAIC (Effective Autism Intervention Certificate)

The Effective Autism Intervention Certificate (EAIC, or simply the “Autism Certificate”) provides some minimal coverage of the behaviorological knowledge and skills that are relevant to working with autistic children. It is designed for all who work with autistic children or other developmentally disabled persons, especially those who are hired to work with these children but who bring little training or experience to the job. The knowledge and skills from this certificate are minimal for work with autistic children; additional coursework and practical work must be sought. This certificate includes these requirements:

BEHG 100 Child Rearing Principles and Practices
BEHG 110 Introduction to Behaviorology Terminology
BEHG 210 Introduction to Behaviorology I
BEHG 211 Introduction to Behaviorology II
BEHG 405 Basic Autism Intervention Methods
BEHG 425 Classroom Management and Preventing School Violence

VBC (Verbal Behavior Certificate)

The Verbal Behavior Certificate (VBC) provides extensive coverage of this complex area of behaviorological knowledge. This area is relevant to anyone teaching foreign languages or ESL, or working with language-deficient children (perhaps due to developmental disabilities). This certificate includes these requirements:

BEHG 110 Introduction to Behaviorology Terminology
 BEHG 210 Introduction to Behaviorology I
 BEHG 211 Introduction to Behaviorology II
 BEHG 340 Introduction to Verbal Behavior
 BEHG 512 Advanced Behaviorology I
 BEHG 513 Advanced Behaviorology II
 BEHG 541 Advanced Verbal Behavior

Current Courses in TIBI Certificates

The components of TIBI's certificates come from TIBI's 17 current courses. All of the Institute's courses follow the standard university pattern as earning three semester credits (except a master's thesis or project, which involves six credits, and a dissertation, which involves 12 credits). Each semester credit represent about 150 hours of contact with the course material. This figure derives from the general expectation that each traditional "three-credit" course features three in-classroom, face-to-face contact hours each week of a 15 week semester (i.e., a total of 45 contact hours) with two hours of study "outside class" for each hour "inside class." This means 90 further study hours, for a total of 135 hours per course per semester. The additional 15 hours of study in TIBI's courses compensate for its courses occurring asynchronously (i.e., no in-classroom, face-to-face contact).

Courses by Number and Title

Regarding explicitly numbered and titled courses, TIBI currently offers these 17 courses:

BEHG 100 Child Rearing Principles and Practices
 BEHG 110 Introduction to Behaviorology Terminology
 BEHG 210 Introduction to Behaviorology I
 BEHG 211 Introduction to Behaviorology II
 BEHG 330 Companion Animal Training
 BEHG 340 Introduction to Verbal Behavior
 BEHG 350 Behaviorology Philosophy and History
 BEHG 405 Basic Autism Intervention Methods
 BEHG 425 Classroom Management and Preventing School Violence
 BEHG 430 Resolving Problem Animal Behavior
 BEHG 435 Performance Management and Preventing Workplace Violence

BEHG 455 Behaviorological Thanatology and Dignified Dying
 BEHG 465 Behaviorological Rehabilitation
 BEHG 480 Green Contingency Engineering
 BEHG 512 Advanced Behaviorology I
 BEHG 513 Advanced Behaviorology II
 BEHG 541 Advanced Verbal Behavior

Brief Course Descriptions

These course descriptions derive from Ledoux, 2015. Except for the "possible additional courses," they are repeated directly from the syllabus of each course published in two sequential issues of *Journal of Behaviorology*: Volume 19, Number 2 (Fall, 2016) and Volume 20, Number 1 (Spring, 2017). All these syllabi work in conjunction with O'Heare, 2015, and share the patterns of course characteristics specified therein.

BEHG 100 Child Rearing Principles and Practices

BEHG 100 Child Rearing Principles and Practices provides students of any age and interest (such as child care or parenting) with the scientific contributions of behaviorology that can instill or enhance the knowledge and skills for caring for (i.e., conditioning) children in effective, pro-active, non-coercive, positive, and loving ways. Behavior management related skills for application in everyday public and personal situations involving children are included. (Prereq: None.)

BEHG 110 Introduction to Behaviorology Terminology

BEHG 110 Introduction to Behaviorology Terminology provides the student with the basic technical vocabulary of the discipline of behaviorology by mainly conditioning terminology responses, emphasizing its laboratory research methods and its experimentally derived principles, concepts, and practices. (Prereq: None.)

BEHG 210 Introduction to Behaviorology I

BEHG 210 Introduction to Behaviorology I is the first of a two-course sequence (BEHG 210 & BEHG 211) which begins to provide both majors and non-major students with an initial introduction to various interrelated components of the natural science of behavior, behaviorology. Going beyond basic terminology, these components involve the interrelations between and among the antecedent and postcedent variables controlling behavior, the range of processes involved in environment-behavior relationships, and the various components of interventions that change and expand behavior repertoires through contingency engineering. These interrelated components include relations with physiology, elaboration of basic research methods, fundamental principles and concepts,

and elementary practices, as well as historical and philosophical perspectives and trends. (Prereq: None.BEHG-110: Introduction to Behaviorology Terminology *recommended*...)

BEHG 211 Introduction to Behaviorology II

BEHG 211 Introduction to Behaviorology II is the second of a two-course sequence (BEHG 210 & BEHG 211) that provides both majors and non-major students with a continuing introduction to various interrelated components of the natural science of behavior, behaviorology, and represents a minimum prerequisite for all higher level behaviorology courses. The content covered, some through the repetitious expansion typical of natural-science education, includes general applications of the principles and practices of behaviorology focusing on a range of problem prevention and intervention techniques and considerations (e.g., differential reinforcement, shaping, chaining, fading, schedules of reinforcement, and problems with aversive controls) in a range of settings, along with an introduction to advanced topics such as equivalence relations, the value/rights/ethics/morals continuum, verbal behavior, consciousness, personhood, life, death, and reality. (Prereq: BEHG-210: Introduction to Behaviorology I.)

BEHG 330 Companion Animal Training

BEHG 330 Companion Animal Training applies behaviorology in the field of companion animal training. BEHG 330 addresses (a) successful, non-coercive animal training practices, derived from basic principles, that are used by professional animal trainers, and (b) how to teach companion animal owners how to train their companion animal. After reviewing basic principles of behavior within the context of working with non-human animals, relevant practices are differentially applied to the effective training of commonly required behaviors for four representative species: dogs; cats; birds; and horses. The application of these principles, strategies, and practices may be applied to other species of companion animal and indeed non-companion animals with minor variations. (Prereq: BEHG-210: Introduction to Behaviorology I.)

BEHG 340 Introduction to Verbal Behavior

BEHG 340 Introduction to Verbal Behavior builds, using a programmed instruction format, on the basic coverage of verbal behavior that was presented in BEHG 211. The course introduces students to the behaviorological analysis of language as verbal behavior. Covered topics include such fundamental concepts as (a) differentiating verbal and non-verbal behavior, (b) the verbal community, (c) mediated reinforcement, (d) the basic verbal behavior relations called mands, tacts, intraverbals, and codics and duplcs (and the subtypes of these last

two), (e) various extensions of these elementary verbal operants, (f) the most common variables of which verbal operants are a function, (g) some of the ways these variables combine in the multiple control of complex verbal behaviors, (h) response products, (i) point-to-point correspondence, (j) formal similarity, (k) thematic and formal controls over verbal behavior, and (l) the ways the verbal community conditions verbal responding under the control of covert stimuli. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 350 Behaviorology Philosophy and History

BEHG 350 Behaviorology Philosophy and History starts with an in-depth treatment of the philosophy of science, not only of the natural sciences in general (i.e., naturalism), but also of the behaviorology discipline in particular (i.e., radical behaviorism). The course traces the development of this philosophy since the early 1900s, comparing and contrasting it with other philosophies of the times, examining its role in the emergence of the behaviorology discipline, and considering its implications for experimental and applied work at the individual and cultural levels. Then, the course covers an in-depth treatment of the history of the emergence of behaviorology as a discipline. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 405 Basic Autism Intervention Methods

BEHG 405 Basic Autism Intervention Methods provides students with basic contingency engineering practices and skills needed for successful interventions with autistic and other developmentally disabled individuals. Topics include (a) the evaluation of different approaches for effectiveness, (b) effective training curricula and programs, (c) home-based and center-based settings, (d) the different roles of professionals, para-professionals, and school systems involved in autism intervention efforts, (e) the organizational and legal supports available to autistic children and their families, (f) the roles of different autism treatment team members, (g) the organizational and legal interactions between families with autistic children and their local schools, and (h) some answers to the most common questions asked by parents of autistic children. Examination of actual autism training curricula, programs, practices, data sheets, settings, and case histories are integral parts of the course. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 425 Classroom Management and Preventing School Violence

BEHG 425 Classroom Management and Preventing School Violence covers the application of behaviorology to non-coercive classroom management skills and their

relation to preventing school violence. After reviewing the role that punishment and coercion play in prompting violence of all types through all levels of society, the course focuses on the use of effective, non-coercive behaviorological skills for classroom management that school teachers and staff can personally implement—especially in the classroom, but also in the cafeteria and gym, and on the bus and playground—to reduce and prevent the occurrence of all kinds and levels of school violence while also enhancing the effectiveness of instruction. These skills replace the unscientific emphasis on coercive “discipline” practices, thereby *preventing* the violence that such practices may themselves induce. Then, the course focuses on the various recommended school-wide policies and procedures for *detering* the actual occurrence of school violence in situations where violence has become likely. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 430 Resolving Problem Animal Behavior

BEHG 430 Resolving Problem Animal Behavior applies behaviorology in the field of working with companion animals at an advanced level. BEHG 430 addresses (a) functional behavioral assessment of problematic behavior exhibited by companion animals, including but not limited to, dogs, cats, birds, and horses, and (b) the construction and implementation of non-coercive contingency management plans to resolve problematic behaviors. After reviewing basic principles of behavior, within the context of working with non-human animals, functional behavioral assessment is covered in detail, including a functional diagnostic system. Forms are provided for student use. Next, the basic strategy for constructing a non-coercive contingency management plan based on the behavior replacement model is addressed, followed by coverage of behaviorological procedures applied to resolving problematic animal behavior. Teaching human clients to participate in intervention protocols is also covered. The material in this course is applicable to resolving problematic behavior of any non-language exhibiting, or minimal-language-exhibiting, species (including wild animals and humans who exhibit few or no language skills). In the last two weeks of the course, the student will require access to a companion animal (and basic training supplies) for the final, hands-on, assignment. (Prereq: BEHG-330: Companion Animal Training.)

BEHG 435 Performance Management and Preventing Workplace Violence

BEHG 435 Performance Management and Preventing Workplace Violence covers the application of behaviorology to non-coercive workplace management skills and their relation to preventing workplace violence.

After reviewing the role that punishment and coercion play in prompting violence of all types throughout society, the course focuses on the effectiveness of the non-coercive skills that performance management applies in the full range of workplace settings to replace the unscientific emphasis on coercive management practices thereby *preventing* the violence such practices may themselves induce. The course also compares, applies, and evaluates various recommended policies and procedures for *detering* the actual occurrence of workplace violence in various workplaces (e.g., industrial, manufacturing, organizational, marketing, financial, institutional, or retail business settings). (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 455 Behaviorological Thanatology and Dignified Dying

After reviewing the role that punishment and coercion play in prompting violence of all types throughout society, BEHG 455 Behaviorological Thanatology and Dignified Dying focuses on the scientific knowledge and skills needed to replace some subtle, residual violence, visited on society members suffering terminal illness, with scientifically informed practices that allow retention of human dignity for all parties in these circumstances, but especially for the dying individual, during the social death, person death, and body death of the terminal-illness process. Answering the question of how we can improve end-of-life interactions between the dying and society, between the increasing numbers of the terminally ill and their survivors, between ourselves and our loved ones in these difficult times, is an integral course component, as is a range of scientifically grounded alternative, proactive, dignity maintaining practices. Which professional group (e.g., medical doctors or nurses, hospice personnel, funeral directors, and/or behaviorologists) might best organize these improvements and new practices is explored, along with some problematic medical ethics. The historical context, and social contingencies affecting new practices, are included in the consideration of how to move from old to new practices. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 465 Behaviorological Rehabilitation

BEHG 465 Behaviorological Rehabilitation provides students with the application of behaviorological considerations to help improve human interactions and success rates in institutional rehabilitation settings such as prisons. After reviewing the problems generated by the sometimes unnecessary coercion that too often informs many practices in such settings, the course examines the value of replacing the unscientific emphasis on coercive practices with effective, comprehensive, and systematic science-based practices for more successful

rehabilitation of both adult and youth offenders. The course takes a data-based orientation to the general design and management of correctional institutions, and the training and professionalism of staff in those settings, as an integral course component. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 480 Green Contingency Engineering

BEHG 480 Green Contingency Engineering addresses global problems in a format that allows the student to carry out considerable self-guided analyses and explorations into topics of particular interest to them within the context of an appropriate foundational science. After covering the role of coercion in prompting many levels of violence throughout society, from interpersonal and family interactions, through educational and workplace situations, to international and cultural relations—violence that interferes with problem solutions (see Sidman, 2001)—and while emphasizing non-coercive policies across all levels of society in solving problems, this course probes the range of actual and potential behaviorological applications to the behavior components of a wide range of global problems and solutions, starting with solutions reported in the natural science of behavior literature, and proceeding to design, and if possible test, not only extensions to such solutions but also new solutions to accessible aspects of as yet unaddressed planetary or cultural problems. The focus is on improving cultures and the potential for human and planetary survival. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 512 Advanced Behaviorology I

BEHG 512 Advanced Behaviorology I is the first course of a two-course sequence (BEHG 512 & BEHG 513) covering, in detail, the variables of which the behavior of humans and other animals is a function, as discovered from the natural-science perspective and with emphasis on increasingly complex human behavior. Included is not only a range of pertinent and accessible environment-behavior functional relations, but also the naturalistic philosophical foundations of the behaviorology discipline (the natural science and technology of environment-behavior relations) as well as the research methodology involved in discovering the independent variables in these relations and engineering them into sophisticated applications and interventions beneficial to humanity and other animals. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG 513 Advanced Behaviorology II

BEHG 513 Advanced Behaviorology II is the second course of a two-course sequence (BEHG 512 & BEHG 513) covering in detail more of the variables of which

the behavior of humans and other animals is a function, as discovered from the natural-science perspective and with emphasis on increasingly complex human behavior. Included is not only more of the range of pertinent and accessible environment-behavior functional relations, but also more of the naturalistic philosophical foundations of the behaviorology discipline as well as the research methodology involved in discovering the independent variables in these relations and engineering them into sophisticated applications and interventions beneficial to humanity and other animals. (Prereq: BEHG-512: Advanced Behaviorology I.)

BEHG 541 Advanced Verbal Behavior

BEHG 541 Advanced Verbal Behavior, based on the principles and practices of the natural science of behavior, takes students through the full range and depth of verbal behavior analysis especially as presented by B. F. Skinner in his original book on the topic. It also takes the student through the most notable critique of Skinner's work on verbal behavior and through the most notable response to that critique, providing the student with a comprehensive exposure to the topic of verbal behavior, studied from a natural-science perspective. The textbook features extensive examples, applications to literature concerns, and detailed explanations of exceptions, ambiguities, controversies, and implications (all with further comprehensive sets of examples). (Prereq: BEHG-340: Introduction to Verbal Behaviorology.)

Possible Additional Courses

TIBI may add more courses in the future. Ledoux (1990/2015, and 2015) posed various possibilities including these (which here use the original course numbers from these sources, except for one that duplicated the number for a current course and so was changed):

BEHG (360) Behaviorology and Culture

BEHG 360 Behaviorology and Culture is a probe of the relevance of behaviorology to cultures and their survival and improvement (a) by examining such previously progressive concepts as freedom and dignity and the current effect of these on the development of more effective cultural practices, and (b) by examining a range of scientifically based and improved cultural practices working in concert and producing a better world as represented in the behavioral "utopian" literature. (Prereq: BEHG-350: Behaviorology Philosophy and History.)

BEHG (470) Behaviorology in Education

BEHG-470 Behaviorology in Education is an examination of the interaction between instructional

design and human behavior in educational settings from two vantage points: (a) the theoretical, historical, and philosophical aspects of the facts of teaching and learning, including the reasons for effective and non-effective methods, the role of technology in teaching, and the teaching of thinking, motivation, creativity, and discipline, and (b) the practical aspects of the teaching effort, including teaching as the management of the learning environment, the measurement and evaluation of behavior change, the educational techniques of behavior change, and the expansion of the student's behavior repertoire as a function of teaching. The course includes a laboratory component in which the student prepares and tests teaching materials, designs a course, and addresses the issues of systematic mastery, fluency, and cybernetics in instructional design. (Prereq: BEHG-425: Classroom Management and Preventing School Violence.)

BEHG (335) Survey of Behaviorology Applications.

BEHG-335 Survey of Behaviorology Applications reviews the application of behaviorological principles and techniques to therapy and clinical behaviorology with respect to the common and uncommon solutions for moderate to severe (incapacitating) abnormal behavior problems in common and uncommon settings. The course includes the measurement and classification of the behaviors it surveys. The course can also include lab/fieldwork in measurement and applied methods and research. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG (345) Experimental Behaviorology.

BEHG-335 Experimental Behaviorology surveys complex behavior-environment relationships including stimulus equivalence classes and complex schedules of reinforcement, as well as other complex antecedent and postcedent factors of which behavior is a function. The course includes a laboratory component on the complex relationships surveyed. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG (445) Behavioral Medicine and PNET.

This course is an example of how TIBI's courses continue to be a work in progress: BEHG-445 Behavioral Medicine and PNET (Progressive Neural Emotional Therapy) is a course on these substantive and important topics. While current behaviorologists can supply the part of this description that would discuss PNET (e.g., see: Ferreira & Duncan, 2002; Ferreira, 2012; Johnson, 2012) the larger part, on behavioral medicine in general, will be supplied in due course by a behaviorologist with this expertise. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG (460) Functional Behavior Assessment and Ethics.

[This course description was originally authored by Christopher Cryer, BCBA, NYSLBA.] BEHG 460 Functional Behavior Assessment and Ethics covers professional ethics and the component parts of, procedures for, and completion and implementation of comprehensive Functional Behavior Assessments (FBAs), one of the principle practices developed by behaviorological practitioners and used as well by many others in related applied fields. Course coverage includes the variety of techniques and strategies, from the natural science of behavior, behaviorology, that this kind of assessment incorporates both (a) to discover the accessible causes of specified behaviors of concern that occur to particular clients or consumers in particular settings, and (b) to identify likely interventions to improve these behaviors. The course also covers (c) the many ways in which FBA takes into account biological and environmental—including social—factors that evoke, sustain, or alter the behavior of concern, which leads to, and organizes, the most directly related intervention components, and (d) the effective use of this type of assessment with several different populations (e.g., autistic and developmentally disabled, mental health and aging clients and consumers, and school-based children) along with (e) the federal and state legal requirements for the use of FBAs. (Prereq: BEHG-211: Introduction to Behaviorology II.)

BEHG (475) Behaviorology Intervention Seminar and Practicum.

In BEHG-475 Behaviorology Intervention Seminar and Practicum, in addition to time spent studying the equivalent of a two-hour seminar each week of the semester, the student assists with ongoing contingency engineering work, for a six-hour practicum each week of the semester, in a field settings such as a clinic, school, or other institution or agency. The course considers the applications of behaviorological principles and techniques occurring at the locations of the students' practicums, and includes the measurement and classification of the behaviors of concern at these locations, while providing training in two major repertoires that are needed for effectiveness in the work of contingency engineering: (a) training *about* the techniques, stemming from the laws of behavior, that are used to generate, maintain, increase, and decrease behavior in applied settings, and (b) training *in the actual use*, or application, of these techniques as reported in the research literature and as experienced and practiced on site. May repeat once for credit. (Prereq: [a] Enrollment requires the proximity of an appropriate practicum agency/location willing to work with the student, [b] BEHG-211: Introduction to Behaviorology II, and [c] BEHG-405: Basic Autism Intervention Methods.)

BEHG (485) Behaviorology Teaching seminar and Practicum

In BEHG-485 Behaviorology Teaching Seminar and Practicum, in addition to time spent studying the equivalent of a two-hour seminar each week of the semester, the student assists with ongoing educational contingency engineering, for a six-hour practicum each week of the semester, by helping teach a regular behaviorology course offering. Integral course components include the interaction between instructional design and human behavior from the vantage points of (a) the theoretical, historical, and philosophical aspects of the facts of teaching, including the reasons for effective and ineffective methods, the role of technology in teaching, and the teaching of thinking, emotions, creativity, and discipline, and (b) the practical aspects of teaching, including the management of the student's environment, the measurement and evaluation of techniques of educational contingency engineering, and the expansion of the student's behavior repertoire as a function of teaching. The student participates in the preparation and testing of teaching materials, designs a course, and experiences lecturing, tutoring, and PSI—*Personalized System of Instruction*—sessions, while addressing self pacing, precision teaching, and systematic mastery and fluency, in instructional design. (Prereq: [a] Enrollment requires the proximity of an appropriate seminar/practicum institution/location willing to work with the student, [b] BEHG-[340]: Behaviorology in Education, [c] the course which the student will help teach, and [d] at least one other upper level behaviorology course.) Relevant Textual Resources: Appropriate articles from the natural science of behavior literature.

BEHG (495) Personal Project or Paper.

BEHG-495 Personal Project or Paper is a project (with a report), or a paper (with the goal of publication), relating behaviorology to (and/or improving, with a behaviorological perspective) the popular cultural view of a topic selected by the student and the faculty member in consultation. (Pre: Beh. 340 Introduction to Verbal Behavior, plus other courses that are program specific.)

BEHG (496) Professional Paper.

BEHG-496 Professional Paper is a library and/or field research paper, with the goal of publication, relating behaviorology to the student's preferred applied behavioral field, including the importance, relevance, and contributions of behaviorology to the selected area. (Pre: Beh. 340 Introduction to Verbal Behavior, plus other courses that are program specific.)

Some FAQs

This section covers answers for some “frequently asked questions.” However, it takes the form mostly of just the answers, from which readers can infer the questions.

If the requirements of one certificate include the courses required for another certificate, then each certificate is earned and received as soon as its own requirements are met. For example, if your goal is the PSBC, or the BLBC, you will earn the BLC and the ABC as you work toward your goal. Also, substitution of other behaviorology courses, for those listed for a certificate, can be approved if requested, and might be necessary since some of the courses listed under various certificates may still be under development. (For already-developed courses, see the Syllabus Directory near the back of the latest issue of *Journal of Behaviorology*, easily accessed at www.behaviorology.org.)

TIBI courses should be completed within a standard time frame of four months or less. Few courses will need that much time, unless several are being taken concurrently. If a particular course is the main activity occupying a student's time, that course could be completed in as little as three weeks (based on a standard university single-course, three-week summer session pattern involving nine hours per day—three hours “in class” and six hours “outside class”—for five days per week for the three weeks).

For students whose full-time activity is studying behaviorology courses with the Institute (e.g., professionals who have already graduated from college but who want to add behaviorological science and technology rapidly to their professional repertoires) the standard time frame extrapolates to completing perhaps 15 courses in a year. (The actual number will depend on other factors such as effort, background, study skill, etc.). Starting from the beginning, this is sufficient time for such students to complete the PSBC in an academic year.

Regarding course completion, the goal, expectation, and plan of TIBI, its faculty, and its students is that coursework be, if necessary, auto-remediated within a course to the “A” level. Under this goal, a course is best completed when that level is attained. This can be done within TIBI's standard course time frame.

Awarding of TIBI certificates occurs automatically upon completing the course requirements. An article by O’Heare (2015) contains information on how to enroll along with other pertinent parameters and procedures.

Answers to other questions may interest the reader. Answers are available on pages 42–43 of the TIBI Policies and Procedures published in 2002 (Board of Directors, 2002) for questions regarding (a) substitution of credit from other sources, (b) recognition of, and credit for,

previously acquired, relevant repertoires, and (c) fees, refunds, student files, and much more.

Note that the Institute provides certificates for well completed training to recognize not only the completion of coursework but also the resulting expansion of a student's repertoire. While several university departments around the world offer courses and degrees in behaviorological science, the names of few programs or departments are explicitly labeled as "Behaviorology" in accordance with their behaviorological science content. (One of the closest, named with an older name for the natural science of behavior—before "behaviorology" was in use—is the "Department of Behavior Analysis" at the University of North Texas in Denton.) This leaves formal and appropriate recognition of behaviorology repertoires ambiguous and inadequate. One of the major reasons why The International Behaviorology Institute exists is precisely this scarcity of acknowledged educational outcomes! ♣

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Elements of the Ongoing History of the Behaviorology Discipline Part I

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Abstract: *Part I* of this paper begins by describing the evolution of some organizations in the behaviorology discipline that occurred after the time frame covered in the historical document by Fraley and Ledoux (1992, i.e., after 1990). Then it discusses some conceptual and educational advances and opportunities occurring in that same time frame. *Part II* will (a) complete the discussion of the BA–equivalent curricular component at SUNY–Canton, the first attempt at a functioning university educational program *with explicit behaviorology courses*, (b) review some behaviorological advances in the educational curricula for training companion animals, (c) list some examples of behaviorological books and articles appearing since 1990, and (d) describe some further developments occurring also in this time frame. While each of the two Parts of this paper includes the references to works that each has cited, only *Part II* includes the Endnotes for both Parts. [Part II appears in the next issue.]

This paper not only first appeared in 2015—and retains that reporting perspective—but it also provides a sense of the directions in which various contingencies were driving the independent natural science of behavior, behaviorology, during and after nearly 30 years since the official organizing of the discipline as behaviorology in May 1987, a discipline with a history now stretching back over 100 years (see Ledoux, 2012a, 2012b, 2014a). Covering some major disciplinary developments that occurred in the years from 1997 to 2002, the first version of this material, written in late 2001, appeared as the “Afterword” at the end of the *Second Edition* of the *Origins and Components of Behaviorology* book. In a manner that avoided changing the articles in this book, that Afterword updated some of the history of the behaviorology movement and discipline that Fraley

and Ledoux first reported in a paper that was circulated privately in 1990 and then originally published in 1992 (Fraley & Ledoux, 1992; for the most recent reprinting, see Fraley & Ledoux, 2015). Now, in 2015, nearly 15 years later, more updating of the ongoing disciplinary history is in order.

We begin by elaborating the ongoing history and evolution of the professional organizations supporting behaviorologists, including behaviorology conventions. Our sources include historical material derived from some of the papers that appeared in the newsletters of the concerned organizations at the time of the changes, including the summer/fall 1997 issue of *Selections*, the International Society for Behaviorology (ISB) newsletter, and the inaugural issues of *TIBI News Time* (TNT; volume 1) in 1998. Consideration next turns to conceptual

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Note: Splitting this paper into two parts resulted in the references sometimes seeming out of order, because their citations were kept unchanged from the original paper. The two parts originally appeared as one in the *Third Edition* of *Origins and Components of Behaviorology* (see Ledoux & O’Heare, 2015) where this paper’s pages were previously occupied by David Feeney’s paper about on–line, real–time behaviorology applications. Feeney’s paper is still available; you can find it in the “first ten–years archive” at http://www.behaviorology.org/oldsite/origins_book_complete.htm on the www.behaviorology.org website as a PDF link with the label “On–line Therapy paper,” or see Feeney, 2002.

Key words: history, behaviorology, education, natural–science curricula

advances and educational opportunities by revisiting not only the contents of some papers that appeared in later issues of *TNT* (volumes 3 and 4) in 2000 and 2001, but also some actual curricular developments. Then we discuss some of the areas of continuing disciplinary growth for the years from 2002 to 2015, using resources mostly available in the pages of *Behaviorology Today* (volumes 5 through 15) and then *Journal of Behaviorology* (volumes 16 and beyond). These developments, and their contextual considerations, provide some sense of the directions of the evolution of the behaviorology discipline and the communities in which it exists.

Organizational Evolution

TIBA and ISB

One major development after the historical analyses that Fraley and Ledoux made in their 1992 paper (see Fraley & Ledoux, 2015) concerns organizational changes. Before the end of 1997, the original behaviorology organization, under the label The International Behaviorology Association (TIBA) had, after debates that ultimately supported observing the outcomes of environmental selection on organizational directions, became the International Society for Behaviorology (ISB). Occurring mainly under the leadership of Ernest Vargas, this change reflected a change in focus for TIBA/ISB from independence and concern for all disciplinary components in general to a specific emphasis on the experimental science component of the discipline and its companion convention activities. To assure support also for other disciplinary components, some continuing ISB members also acted to provide an organizational locus for the other disciplinary components at the interface of discipline and culture—particularly the educational component, and its companion publication needs—by founding, in late 1997, The International Behaviorology Institute (TIBI). As a non-profit educational organization with 501-C-3 tax status, TIBI completed incorporation in New York state in early 1998, and its members were active in other developments as well. (The four TIBI founders—Stephen Ledoux, Lawrence Fraley, David Feeney, and Glenn Latham—contributed all the papers in the first and second editions of the *Origins and Components of Behaviorology* book.) Hand in hand with TIBI's educational efforts was a growing shift from describing the conceptual position of behaviorology as one of natural science versus “social” science (which was how some parts of the *First Edition* dealt with the matter) to describing it in terms of the more fundamental issue of natural-science disciplines versus mystical disciplines, both theological and particularly secular mystical disciplines, and their relative claims on the

study of behavior. This shift was occurring as successes accumulated in developing educational opportunities for the dissemination of credit and non-credit courses in behaviorology. Each of these developments receives some detailed attention.

In a short paper titled “Supporting both our science and the other components of our discipline,” Ledoux (1997) discussed some of the considerations, pro and con, in the transition from TIBA to ISB. Since the name-change motion occurred as support mainly/only for the experimental science component of the discipline, Ledoux made explicit his preference to retain an organization clearly supportive of *all* disciplinary components. However, while disciplinary independence was (and the evidence in a report such as this shows that it must remain) a crucial factor in such deliberations, his support for it in this paper mostly came through by implication. Behind his paper was a letter that Lawrence Fraley had written in late 1990 to colleagues who also were helping lead the behaviorology movement. This letter had already discussed in great detail the crucial significance and organizational implications of active and ongoing support for disciplinary independence. While Ledoux agreed with the content of this letter, he had not received it as he was teaching in China in 1990–1991. Due to its continuing significance, Fraley subsequently added an introduction and conclusion to the letter as the major part of editing it to make it an article—Fraley, 2001a—and it appeared in *TIBI News Time* with the title “Defining the behaviorology movement: Critical distinctions from 1990.” This letter/paper supplies a vital background for Ledoux's 1997 article. (*Behaviorology Today* reprinted both articles; you can most easily find them in the PDF file of Volume 5, Number 1 on the TIBI web site at www.behaviorology.org.) Meanwhile, Ledoux's 1997 article informs many of the points in this section. After acknowledging that discovering appropriate directions for efforts to build the science, discipline, community, and organizations of behaviorologists was no easy task, Ledoux continued with several points.

The focus could stress just experimental science but, by sidestepping the other disciplinary components, that could ultimately be a disservice to the science and to those the science could benefit. While being involved in a scientific society—involved as a contributor engaged in scientific investigation—was important to every behaviorologist, very likely not all behaviorologists could, nor should, be involved this way. If behaviorology was to make contributions in the area of engineering applications of experimental results, then behaviorologists have always had more work than just conducting and reporting experiments.

The community of behaviorologists had, and retains, the responsibility to assure that behaviorology develops not only its experimental component but also all of the discipline's other components, including philosophical, conceptual, analytical, and technological components. Disciplinary organizations must provide support for all behaviorologists, including those whose histories prepare them to make their best contributions in these other areas, areas other than that of performing scientific experiments. In addition, a certain interdependence obtains among these areas; those working in each of these areas need the contributions of those working in the other areas if together they are to move the discipline forward in a balanced manner. After all, where would physics be if the theoreticians were not around to tell experimenters "what to look for," and if experimenters were not around to tell theoreticians when they were "losing contact with reality?" Together both groups not only have fun but make contributions to both their discipline and the culture.

Positing that perhaps the then current organization (i.e., TIBA/ISB) should focus rather exclusively on experimental science, Ledoux pointed out that if that is the full extent of behaviorologists' efforts, they may not be able to continue for very long due to other variables, current and historical, that affect their existence (variables considered in Fraley & Ledoux, 2015; Fraley, 2001a). So, even if they organize a basic science-focused society, behaviorologists must also arrange to maintain some sort of organized involvement in their other disciplinary components.

In addition, some doubt remained that a handful of behaviorologists, even a handful as large as 150 (a "membership cap" that some had proposed), all engaged in conducting basic experimental science and not much else, would succeed in having the kind of impact on the wider culture needed even for their own survival as behaviorologists, let alone for the kind of impact that the comprehensive discipline of behaviorology could have, and should have, on that culture in so many currently—and increasingly—needed ways (see Ledoux, 2014a). Indeed, if all, or even most, behaviorologists engage rather exclusively in experimental research and ultimately retire and grow old and cease activity, then an early demise to this iteration of the discipline—which would then require its not so predictable rediscovery at some future time—could constitute a reasonable prediction. For starters, without an active educational mission, from where will enough qualified—adequately conditioned—replacement behaviorologists come? Due to the importance of work at this cultural interface, some behaviorologists must engage in other disciplinary components, perhaps even while abstaining from experimental work. As a recent example of such

a situation, Ledoux now points to his own career, in which contrary contingencies disallowed his establishing the laboratory for which he laid the groundwork (see Ledoux, 2015a, and 2013, a short version of which appears in Appendix 5 of Ledoux, 2015f).

So, Ledoux argued that in some organized way, the community of behaviorologists must protect and extend all disciplinary components, not just the experimental science component. They must respect their independent disciplinary status, and take steps to establish the long-term presence of behaviorology in higher education, and on the natural science roundtable, by supporting all disciplinary components. That was in essence the original purpose of the original behaviorology organization (see the history of TIBA, and its statement of purpose, in Fraley & Ledoux, 2015). And that purpose did change, along with the name change to ISB. Thus the contingencies that had evoked Ledoux's argument continued, a circumstance that led to the founding of TIBI.

To summarize those points, the natural science of behavior needs to be completely organized, formally and independently, if it is to emerge fully to take its place at the natural science roundtable and meet the urgent demands of its cultural mission (see Fraley & Ledoux, 2015; Fraley, 1998a; Vargas, 1997). Behaviorological professionals around the world need organizational structures that support *all* the components of their formal independent discipline. These structures could carry out programs of support for the world's growing number of behaviorological scientists and practitioners. Such organizational support is needed to consolidate the independent, natural science status of their discipline and thus to promote vigorously their professional activities.

As behaviorologists more formally organize and support the independence of their natural science discipline, and so more capably contribute to world behavioral wellbeing, another chapter began in the history of the organizations of and for behaviorologists. Behaviorological scientists must have one or more organizations that work to promote the reality and efficacy of behaviorological science and the disciplinary interests of behaviorological scientists worldwide, and that work to establish officially the accouterments of independent disciplinary status including behaviorology's own academic homes and programs. Developments such as these may not make that much difference in the future of behaviorology; the fact of its natural science status may carry enough momentum. Then again, such developments may make all the difference in the world.

The Founding of TIBI and TIBIA

In an editorial titled "Welcome to TIBI," Ledoux (1998) discussed the founding of TIBI after the transition of TIBA becoming ISB. Using current references this

section covers the major paraphrased points from Ledoux's 1998 editorial.

Through an exchange of papers, proposals, and perspectives through the years 1996–1998, David Feeney, Lawrence Fraley, Glenn Latham, and Stephen Ledoux recognized certain organizational needs for an organizational structure (a) that could provide training in behaviorology, especially for those who lacked ready access to that training, and (b) that could provide support for professionals who have been trained in behaviorological science. Their actions were to found *The International Behaviorology Institute* (TIBI), a non-profit educational corporation. The materials in the inaugural issue of TIBI's newsletter/magazine cover their concerns and indicate their directions.

Due to the wide-ranging nature of those materials, an overview of various related historical items is in order. The incorporation of TIBI was based on a DBA (i.e., a "Doing Business As" form) that Ledoux had filed in 1990 but had not used. The proposal for TIBI's incorporation, which he sent to the other three founders in the summer of 1997, included not only a rationale for founding TIBI but also drafts of such items as by-laws, letterheads, and brochures. The other founders (Lawrence Fraley, Glenn Latham, and David Feeney) made improvements to these documents and together the four founded TIBI by initiating the incorporation process in November of 1997. After the New York State Education Department granted its "consent to filing," they completed the incorporation process on 20 February 1998.

Fraley and Ledoux (1992/2015) had recounted the origins and cultural mission of behaviorology, the natural science discipline concerned with the study of environment-behavior relations. In the process they stressed both (a) the need to maintain disciplinary organizations fully supportive of all the various disciplinary components of behaviorology (including philosophical, experimental, conceptual, analytical, and technological components) and (b) the need to establish a variety of disciplinary homes for behaviorology, including academic programs and departments.

In 1990 Ledoux had described possible curricula for training behaviorologists (see Ledoux, 2015b). Later, Ledoux (2015c) and Latham (2015) addressed the specific need to provide behaviorological training for Chinese behavior scientists who, like some professionals in other countries, aspire to bring behaviorology to bear on their country's concerns, especially in education and childcare, even though behaviorology training opportunities are few in those countries. TIBI's first visiting scholar, coming to the USA in late 1997 to study behaviorology through TIBI, was Ma Wen (see Ma, 1998), and TIBI's second visiting scholar was Li Fangjun (see Li, 2000).

Then, while Ledoux (2015d) sketched the evolving nature of disciplinary organizations, the effort to meet the concerns expressed in those papers led Feeney, Fraley, Latham, and Ledoux to incorporate TIBI. To better meet these concerns, TIBI also included a discipline-supporting association, *The International Behaviorology Institute Association* (TIBIA). As covered in TIBI's By-laws (TIBI, 1998 [later updated; see TIBI, 2017]) TIBI is a Board of experienced doctoral-level behaviorologists who are committed to maintaining the integrity of behaviorology as the natural science of behavior discipline by assuring the prevention of the kind of excess drift toward control of the discipline mainly by political contingencies (e.g., contingencies making the number of members more important than the qualifications of members) as had happened to earlier organizational expressions of the independence of the natural science of behavior from psychology (see Fraley & Ledoux, 2015). Having started with the original four founding members, the TIBI Board grows gradually by inviting other senior behaviorologists—whose disciplinary involvement, contributions, and products have demonstrated a leadership level of commitment—to join the Board. Meanwhile, the behaviorologists and others who join the organization as members participate in, and run, TIBIA as an organization serving and supporting their professional needs as they operate at the cultural interface, where they contribute behaviorological knowledge, products, and services while providing professional ethics and oversight for the discipline.

The purposes of TIBI, also listed in TIBI's By-laws, are the same as the original purposes of *The International Behaviorology Association* (TIBA). TIBI fosters these purposes through several activities, including these: TIBIA members host visiting scholars studying behaviorology. TIBI faculty (who are TIBIA members) arrange or provide education and training for behaviorology students. And TIBI provides certificates to students specifying that they successfully completed explicit behaviorology academic curriculum requirements. All these activities continue.

As should be clear, TIBI (and TIBIA) are complementary with, rather than competing with, other organizations serving natural scientists of behavior locally, and around the globe, including, for example, ISB and Association for Behavior Analysis International (ABAI). TIBI/TIBIA serves as an organizational arm of the basic natural science discipline that informs various applied areas (e.g., Applied Behavior Analysis [ABA]); it represents the science that many practitioners apply. While TIBI/TIBIA is indeed "yet another" organization for natural scientists of behavior, it does not fragment the movement as some have claimed. Instead, it complements the other organizations by addressing important concerns not currently covered by any other organization. Many readers will have sensed

an increasing general interest in the existence of the kind of organization that TIBI/TIBIA represents. And most members of TIBI/TIBIA are also active members of the other organizations. (See the latest issue of *Journal of behaviorology* or www.behaviorology.org for TIBI/TIBIA membership information and an application form.)

Behaviorology Conventions

Fraley and Ledoux (2015) included brief descriptions of the first five TIBA conventions. Appendix 4, in the *Second Edition of Origins and Components of Behaviorology*, included brief descriptions of conventions 6 through 9; for the *Third Edition*, these descriptions for conventions 6 through 9 appear here:

❧ The Hotel Parador San Javier in Guanajuato (Mexico) was the site of TIBA-6 on 18–20 March 1994. Rebeca Garcia coordinated the site while Nyla Lamm organized the program and chaired the sessions. The convention drew about 21 attendants. Victor Arredondo (*Director General De Education Superior* of Mexico) presented “Reflections on Mexico’s higher education system” as the B. F. Skinner Memorial Lecture (see Arredondo, 1995). At this convention, TIBA took the perhaps counter-intuitive step of capping membership at 150 (see Vargas, 1994; Fraley & Ledoux, 2015, Chapter 5, discussed some dangers inherent in such a policy in the “Science club versus cultural mission” section).

❧ The University Centre Hotel in Gainesville, Florida, was the site of TIBA-7 on 10–12 March 1995. Anne Kupfer coordinated the site, organized the program, and chaired the sessions. The convention drew about 20 attendants. William Baum presented “Radical behaviorism and the concept of agency” as the B. F. Skinner Memorial Lecture (see Baum, 1995). After this convention, TIBA decided that the convention would at least overlap B. F. Skinner’s birthday and, preferably, the B. F. Skinner Memorial Lecture would be presented on Skinner’s birthday.

❧ The University Inn at Utah State University in Logan, Utah, was the site of TIBA-8 on 17–20 March 1996. Carl Cheney coordinated the site, organized the program, and chaired the sessions. The convention drew about 26 attendants. John Falk presented “Schedule induced behavior” as the B. F. Skinner Memorial Lecture. By this convention, TIBA had added a full day of workshops prior to the regular program.

❧ The John Carver Inn in Plymouth, Massachusetts, was the site of TIBA-9 on 20–22 March 1997. Julie Vargas coordinated the site and the program, which included a special address by Murray Sidman. Gerald Holton presented the B. F. Skinner Memorial Lecture.

By 2015 information on later conventions, under ISB, had become difficult to locate. This was perhaps due to the transition from printed brochures to internet sources in the same time frame (or perhaps a contributing factor

was the implementing of more restrictive convention attendance policies that ISB had once discussed). In any case the descriptions here, of later ISB conventions, are, individually and as a group, incomplete.

The authors’ understanding is that ISB held, and still holds, an annual convention each March. Here is some information on the first four conventions under ISB:

❧ The tenth ISB convention occurred in 1998.

❧ The 11th ISB convention occurred in Sacramento, CA, in 1999.

❧ The 12th ISB convention occurred in Morgantown, WV, in 2000.

❧ The 13th ISB convention occurred in Chicago, IL, in 2001.

Later, nearly 15 years after the last TIBA convention, TIBI started holding conventions in 2011. One reason leading to this TIBI activity concerned the increasing call for open conventions by TIBI members, because no other convention outlet met their information dissemination needs. Due to continuity with TIBA conventions, and overlap with ISB conventions, TIBI calls its conventions “Behaviorology Anniversary Conventions” (BACs) in reference to the yearly *anniversary* of the formal organizing of the then 75-year-old natural science of behavior, as behaviorology, at a gathering of natural scientists of behavior in Nashville TN in May 1987. For example, May 2011 was the 24th anniversary of that May 1987 meeting, so TIBI called its convention that year, which was the first TIBI convention, the “24th BAC.” (Only basic information on the TIBI conventions appears here, as one can find details in past issues of TIBI’s journal and on its www.behaviorology.org website.)

TIBI’s annual BACs began with the 24th BAC in 2011. Here is basic information on each BAC through 2015:

❧ Denver, CO, was the site of the TIBI 24th BAC on 29–31 May 2011.

❧ Columbus, OH, was the site of the TIBI 25th BAC on 1–3 August 2012.

❧ Tucson, AZ, was the site of the TIBI 26th BAC on 29 May to 1 June 2013.

❧ Canton, NY, was the site of the TIBI 27th BAC on 21–23 May 2014.

❧ Vancouver, BC, Canada, was the site of the TIBI 28th BAC on 5–7 June 2015.

[❧ Leuven, Belgium, was the site of the TIBI 29th BAC across several meetings during the summer of 2015.]

Conceptual and Educational Advances

Conceptual Advances

One conceptual advance in behaviorology concerned a shift from describing the conceptual position of behaviorology as one of “natural science versus social

science” to describing it in terms of the more fundamental position of “natural science versus mysticism.” In a paper that originally appeared in *TIBI News Time* entitled “Defining natural sciences,” Ledoux (2000a) discussed the status of behaviorology as a natural science in terms of its meeting the fundamental criteria expressed and implied by the historical development of the definition of natural science. Using current references this section covers the major paraphrased points from Ledoux’s 2000 paper:

In addition to behaviorology, other disciplines, such as psychology, deal with behavior topics, a point Lawrence Fraley raised in his “About Behaviorology” article (Fraley, 2000a). However, behaviorologists define the topics differently, and treat them in ways that are radically different from the treatments of other disciplines. In evaluating these differences, one must clarify whether or not any particular discipline allows or invokes non-natural events in its explanations of its subject matter, a point that is a key part of the definition of natural science.

Fundamentally, *natural sciences are defined as disciplines that deal only with natural events* (i.e., independent and dependent variables in nature) *using scientific methods*. A natural event is an event that is definable in terms of such properties as time, distance, dimensions, mass, temperature, charge, and/or a few other properties taken into account by theoretical physicists. These disciplines always exclude non-natural events from their considerations. Other definitions are extant. However, none of them—compared with this definition—so accurately reflects the observed line of fracture dividing natural science disciplines from other disciplines.

In addition, confusion arises from past attempts to distinguish between natural and social sciences. One view calls the former “hard sciences” and the latter “soft sciences.” A contributory misconception is that status as a natural or social science is determined solely by a discipline’s use of scientific methods. But the differences between these two are more complex, because all natural science and social science disciplines use scientific methods. However only some of these disciplines invoke the exclusion of non-natural events from their considerations; those that do so have historically (and contemporarily) earned the title *natural science*. For instance, “Creation science” may make use of scientific methods, but it does so while making non-natural events (e.g., the will of a mystical, faith-based being whom most, if not all, creation “scientists” would consider supreme) the centerpiece of its considerations; thus it is not, and cannot be, a natural science.

Historically all sciences, including the natural sciences, arose out of mystical origins. In western civilization the practice of early natural science involved studies undertaken mainly to unravel the mysteries of the

creative powers of the investigators’ god or gods. Those early investigators focused on various facets of the real world and, in doing so, developed over centuries what came to be known as scientific methods. The phrase *natural science* initially referred to the various subject matters to which such attentions were directed. Of particular significance here is that most of these subject matters were aspects of the extrinsic environment in which the social activity of humanity was conducted; they were not aspects of how that environment controlled behavioral reactions to it, a topic which inheres in the subject matter of behaviorology.

As the natural scientists continued to pursue their work, however, the phrase natural science came to connote their emerging philosophy of naturalism—the consideration, with scientific methods, of *only* natural events (i.e., only independent and dependent variables *in nature*). Thus the phrase natural science became divorced from the original body of subject matters upon which its early investigations were focused. It came to represent an integral philosophy, naturalism (see Fraley, 1999).

Today, however, the connotation of the phrase *natural science* transcends subject-matter considerations; this phrase no longer implies merely *what* subject matters are included under the natural-science label. Rather the phrase *natural science* implies *how* any subject matter is studied. *Any* subject matter can be approached in different ways, including naturalistically or mystically (and the informing mysticism can be theological or secular in character; see Ledoux, 2014a). A subject matter may be approached in the way that *allows* (or possibly even *encourages* or *requires*) non-natural events in its considerations, which would be a “non-naturalistic,” or mystical, approach. Alternatively, a subject matter may be approached in the way that *disallows* non-natural events in its consideration, which would be a “naturalistic” approach. In both cases *different* terms are used to name the resulting disciplines. But only those disciplines maintaining the naturalistic approach (*and* using scientific methods, though this need not always be mentioned) would be considered natural sciences. For example, the most common mystically based search for water is called dowsing while the naturalistically based search for water is called hydrology, a component of geology. The subject matters may appear similar; yet, of the two, only hydrology is a natural science.

Adhering to a naturalistic perspective confers the status of a natural science on a discipline while adhering to a non-naturalistic perspective declines that status. The phrase *natural science* applies to the study of any subject matter based on the philosophy of naturalism; it applies to any subject-matter discipline that studies only natural events (independent and dependent variables in nature) using scientific methods. Behaviorology, for example,

is a strictly natural science, because it applies scientific methods to study only the natural events of behavior (its dependent variable) and its measurable, testable, *in-nature* independent variables.

A vital implication is that status as a natural or social science is also not determined by the subject matter that is under investigation. One traditional notion is that “social science” refers to disciplines dealing with people issues. This is a serviceable definition that is not in conflict with the description of natural sciences as disciplines that exclude non-natural events. Accordingly, some disciplines may qualify under both of these definitions. They might then be considered both a natural science and a social science. For example, the sub area of biology (an historically acknowledged natural science) called epidemiology deals extensively with people issues, and often is considered to be a social science; yet it never sacrifices its exclusion of non-natural events and so remains a natural science. Meanwhile, another sub area of biology, medicine, also deals extensively with people issues. Yet medicine is seldom considered to be a social science; while not nearly as exact as the biology and chemistry from which it comes, it does not maintain explanatory reliance on non-natural events and so is considered to be among the natural sciences.

Status as a natural or social science is also not determined by membership in any organizational or institutional arrangement of disciplines. One example is the differing arrangements of disciplines listed in college catalogs. These placements of disciplines typically reflect the common understanding of what makes a discipline a natural or a social science. Institutions differ in their views not only on which disciplines have ended explanatory reliance on non-natural events (“the natural sciences” such as physics, epidemiology, geology, etc.), but also on where to put disciplines that deal with people issues (“the social sciences” such as anthropology, epidemiology, sociology, etc.). Confusion occurs, because some natural sciences are also social sciences, as they deal in people issues, and so could be listed with the social sciences as well. Behaviorology is an example. More confusion occurs, because some social sciences are also natural sciences, as they maintain the exclusion of non-natural events while using scientific methods, and so could be listed with the natural sciences as well; again, behaviorology is an example.

All those considerations applied to the early concern of differentiating behaviorology and psychology. At the most fundamental level, behaviorology—as a discipline—disallows the inclusion of non-natural (i.e., mystical, unmeasurable, untestable) events in its considerations (e.g., souls, minds, psyches, selves) and, by that approach to its subject matter, joins the ranks of the natural sciences. However, *as a discipline*, psychology at least

always *allows* non-natural events in its considerations. This approach to its subject matter constrains psychology to remain outside the ranks of the natural sciences. Some individual psychologists may operate from a natural science perspective, but this does not change the fact that psychology, as a discipline, is not a natural science, even if the work of these individuals is more closely aligned with a natural science; indeed they might be candidates for operating under the disciplinary umbrella of a natural science of behavior. However, Fraley and Ledoux (2015) discuss the improbability of psychology changing from this position (also, see Fraley, 1992, 1998b). So one basis for differentiating behaviorology and psychology is that they do not share a common approach to their subject matters, with only behaviorology qualifying as a natural science (also, see Fraley, 2000b).

In addition to the differences in *how* they approach the study of a subject matter, psychologists and behaviorologists define different subject matter and they can be differentiated on that basis as well. The subject matter of behaviorology, which it approaches naturalistically, is the functional relations between behavior and experimentally manipulable independent variables. The most helpful and productive of these variables are in the external environment and are subject to interventions that bring about beneficial behavior changes (with common yet sophisticated examples being the contingency-engineering skills used at home and in school; see Latham, 1994, 1998). The subject matter of psychology, on the other hand, which it approaches non-naturalistically, is the hypothesized relations between behavior and a range of (non-natural/unmeasurable) variables, including the psyche, mind, self, and other non-natural, internal agents that are put forward as causes of behavior. But the causal status of those variables cannot adequately be assessed, because they are non-natural and cannot be scientifically tested in spite of claims about relying on scientific methods in the attempt. As a result, psychology cannot directly change these non-natural variables and must instead rely on intuitive approaches (i.e., approaches resulting from coincidental successes unconnected with the psychological, non-natural variables) regarding what might be done with real variables to produce helpful behavior change (see the appendix on “Adventitious Control,” Ledoux, 2015e).

Calling behaviorology a natural science, however, causes discomfort for some people, because classifying behaviorology as a natural science is not in keeping with common though misinformed notions of what constitutes natural sciences (see Fraley, 2000c). The most common misperception, previously mentioned with respect to college catalogs, is that “natural science” is defined by traditional membership in a certain group of disciplines (the group comprised of physics, chemistry,

etc.) when instead *the membership of a discipline in that group is itself defined by the excluding of non-natural events from the considerations of a discipline*. It is *that exclusion* that both (a) defines a discipline as a natural science and so (b) automatically places it among the group of disciplines known as natural sciences. Any discipline that fails to exclude non-natural events from its considerations is not to be found in that group, while every discipline that relies exclusively on natural variables is in that group, *regardless of how long ago or how recently that exclusion developed*. Of course, higher education administrators sometimes locate natural science disciplines in other administrative units for reasons that are little related to those disciplines' membership in the natural science group. Such action, however, does not alter the validity of those disciplines' membership in that group.

As those points suggest, while every discipline that excludes non-natural events from its considerations, and uses scientific methods, is in the natural science group, not all such disciplines became part of this group at the same time—and *that* is yet a further source of confusion. At one time no disciplines were natural sciences. Then, starting several hundred years ago (for the current iteration of natural sciences) a period occurred in which subgroups of members of several different disciplines began excluding non-natural events, at least from their inquiries if not from their “motives” (i.e., from the stimuli evocative of their activities). Eventually that path, for the groups that took it, converted their disciplines into natural sciences or established new disciplines that displaced and extinguished the previous and less effective discipline (e.g., astronomy rather than astrology). And thus appeared (though the details are beyond the scope of this article) many of the usual natural sciences we know today (physics, chemistry, biology, geology, astronomy, etc.).

Quite some time had passed (prior to the twentieth century) since a subgroup of a non-natural discipline took the step of excluding non-natural events from its considerations. But this could still happen. From among the professionals in *any* discipline that maintains a *non-naturalistic* perspective, a subgroup can come under contingencies to take that step, creating a new natural science of its subject matter. In the twentieth century, a subgroup of the professionals operating within psychology took precisely that step (see Fraley & Ledoux, 2015, for the historical details). This subgroup followed the centuries-old lead of other natural sciences and excluded non-natural events from its considerations. By doing so, and thus creating a critical discontinuity between themselves and those remaining behind in the original non-naturalistic discipline, these professionals created a new natural science of their subject matter. This initial “speciation” of sorts resulted in the founding of The Experimental Analysis of Behavior, later also known as behavior analysis. However,

while the “behavior analysis” label remained claimed by psychology as a branch or “school of thought” within psychology, a number of members of this group were greatly troubled by the credibility concerns raised by being under the thumb, so to speak, of an incommensurable discipline; this prompted their severing ties with psychology, and adopting the label behaviorology as the name for their completely independent natural science of behavior, a natural science that is no type or branch of psychology at all. Thus they were no longer under the psychology discipline requirement that its members, even dissenting ones, allow the mysticism inherent in granting causal status—through an inner agency of behavior origins—to minds, psyches, selves, and so on. (For elaboration, see Fraley, 2000a; 2000b; 2001b; also, see Ledoux, 2000a; 2014a; [2017]).

Today, while *behaviorology* is the *independently* organized natural science of environment-behavior functional relations, *behavior analysis* has become largely a political movement for natural scientists of behavior who are devoted to (a) developing new scholars and scientists (of naturalistic environment-behavior relations) through attempts to convert to naturalism the members of another discipline, psychology, that is fully and publicly committed to a non-naturalistic alternative, while (b) keeping the behavior analytic proponents in contact with the copious resources of those on whom they exert their conversion efforts. Within the behavior analysis movement, the relative strength of these two considerations varies from person to person. However, the behaviorologists, in general, entertain neither of those devotions, regarding the former as impractical and the latter as of debatable ethics (see Fraley, 1997, 1998b, and 1998c for elaboration).

Substantial progress in knowledge and applications attended the long ago formation of the traditional *natural* sciences. That same kind of progress has attended the more recent emergence of the natural science of behavior now called behaviorology. This progress is reflected in the advances in principles and practices applied in many major areas of human concern; details are readily available on those advances and applications (see the bibliography in Ledoux, 2014a, and in Ledoux 2015f).

Meanwhile, no one should be surprised that behaviorologists' concern with scientifically solving *human* problems has led some people to categorize behaviorology *both* as a natural science (using the definition of natural sciences as disciplines that exclude non-natural events while using scientific methods) *and* as a social science (using the definition of social sciences as disciplines concerned with people issues). Indeed, both definitions apply, although at this time the natural science descriptor may carry the greater significance at the interface of discipline and culture.

Early Advances in Educational Opportunities

Curricular developments comprise another major area of disciplinary growth, with increases in the educational opportunities for disseminating behaviorology through credit and non-credit courses. Regarding the development of these opportunities, Ledoux (2001a) described the increased number and sources of behaviorology courses available to the public, as well as some of the history and circumstances that led to the availability of these courses. Using current references this section begins with the major paraphrased points from Ledoux's 2001 paper:

A number of behaviorology courses gradually became available through both TIBI (at www.behaviorology.org) and regular university course offerings, particularly through the first author's university campus—the State University of New York at Canton (SUNY-Canton), as well as through the second author's school for animal behavior technologists—the Companion Animal Sciences Institute. (Behaviorologists at other higher education institutions should provide descriptions of their successes disseminating this independent discipline for publication in future issues of the *Journal of Behaviorology* so that these can then appear in future updates of this paper [perhaps by other authors].)

Some factors relevant to successfully developing courses to disseminate behaviorology, factors that are available to, or confront, behaviorological faculty at institutions of higher education, deserve mention. One that provides a substantial challenge involves expanding formal behaviorology educational opportunities within educational institutions with established psychology departments, or even just groups of psychology faculty, because they see behaviorology as a competitive or redundant threat that is inimical to the interests of organized psychology. In every known case, given the power or opportunity, such groups have moved to suppress, quash, harass, or merely vote down behaviorology curricular developments. Although it may be competitive, and predictably successful on a level playing field, behaviorology is not redundant within institutions of higher education since the topic studied, and the approach to studying it, differ from the alternatives. Such is the most prominent impediment to the expansion of educational opportunities for disseminating behaviorology.

Before the end of 2004, TIBI was committed to having ten behaviorology courses available online, and it met this commitment, as the "Syllabus Directory" showed in (2005) *Behaviorology Today*, 8 (1), page 51. The Syllabus Directory (updated whenever revised syllabi become available) appears in every journal issue and, by the first 2007 issue (volume 10, number 1) of *Behaviorology Today*, the Syllabus Directory (on p. 27) listed 13 basic and applied

behaviorology courses. [The Syllabus Directory continues to appear in every issue under the new journal name, *Journal of Behaviorology*, which was adopted as of Volume 16, Number 1, in 2013; as of 2017, the Syllabus Directory listed 17 behaviorology courses.] To the extent possible, TIBI wants these courses to be offered at three levels:

✦ The first level is to offer the courses for free. This level is for those who simply want to expand their repertoires—but who do not want or need any sort of credit toward TIBI certificates or regular academic degrees—by downloading a course syllabus from TIBI's web site, purchasing the course materials from a book seller, and working through the course solely on their own.

✦ The second level involves paying TIBI tuition and being assigned a TIBI faculty member to help cover course content (while working through the course after downloading the course syllabus from TIBI's web site and purchasing course materials from a book seller). This level is for those who want to earn TIBI credit toward TIBI certificates but who do not want or need regular academic credit (or who do not have access to such educational opportunities). This level of educational opportunity is vital for a discipline that is not yet widely represented with departments and programs of study in large numbers, available to those in various locations. These programs of study are not to be considered "lesser" programs; in many ways, they can be superior to some behaviorological or behavior analytic programs available in universities, because they disseminate uncorrupted, uncompromised behaviorology content by qualified behaviorologists under a formal institutional organization with appropriate governance.

✦ The third level is for those who want or need regular academic credit, perhaps toward a degree from an institution of higher education. (While TIBI's non-profit, 501-C-3 incorporation required the consent of the New York State Education Department, that consent is not an accreditation for TIBI to award "degrees.") At this level each course TIBI offers on its web site can include a list of any regular academic courses, offered by institutions of higher education, that TIBI considers equivalent. Students can then contact the institution of their choice about taking the course, paying that institution's tuition, and getting that institution's credit. (Students who take such equivalent courses may also accumulate and transfer credit toward TIBI's certificates. Visit the TIBI website at www.behaviorology.org or see TIBI, 1999, particularly pp. 12-16, for details on TIBI's certificates and courses; by design, the TIBI Board of Directors originally modeled these courses and certificates on those described by Ledoux, 2015b). [After O'Heare updated TIBI's original 13 courses—in Volume 19, Number 2, in 2016, due to the increasing number of explicitly behaviorology textbooks—and expanded the number of courses to

17 (in Volume 20, Number 1, in 2017), TIBI began the process of also updating its Certificate programs.]

SUNY-Canton's early behaviorology courses. The value of successes with regular academic courses resides at that third level. While SUNY-Canton had listed 14 behaviorology courses for some years before 2015, these courses accumulated in roughly two groups, each of seven courses. (For curricular recommendations as of spring 2015, after 25 years of behaviorology curriculum development experience at SUNY-Canton, see the *Addendum* to Appendix 3, in Ledoux, 2015f.) All of these courses were proposed and approved explicitly as "behaviorology" and "natural science of behavior" courses in their descriptions. The first five were also proposed and approved with a "BEHG"—behaviorology—designator for the course number (e.g., BEHG-135). The designator was changed to "SSCI"—the designator for social science—by the campus Curriculum Committee at the suggestion of the Deans who were concerned, in the late 1990s, to insure that students would be able to transfer these courses to other colleges. Also, the behaviorologist designing and proposing these courses (Ledoux) was a professor in the Social Sciences Department. In this context, the concept of social science inheres more in the concerns of the various social science disciplines for people issues than in any competition with, or alternative to, the natural sciences; ultimately, of course, behaviorology courses should be academically housed with the natural sciences. The last two of the first seven courses were approved after the decision to use the SSCI designator. Before reviewing how these courses arose (i.e., some contingency history) here are brief descriptions of the first seven courses, using the original BEHG designator:

BEHG 135: *Parenting Knowledge and Skills* (equivalent to TIBI's BEHG 201: Non-Coercive Child Rearing Principles and Practices [in 2016, updated to BEHG 100: Child Rearing Principles and Practices]). *Description:* This course provides students of any age and interest (such as child care or parenting) with the scientific contributions of behaviorology that can instill or enhance the knowledge and skills for caring for children in effective, pro-active, non-coercive, positive, and loving ways.

BEHG 245: *Introduction to the Science and Technology of Behavior* (equivalent to TIBI's BEHG 101: Introduction to Behaviorology I [in 2016, updated to BEHG 210: Introduction to Behaviorology I]). *Description:* This course, the first of a two-course sequence and the minimum prerequisite of all higher level courses, provides students with a solid grounding in various components of the behaviorology discipline. The areas covered include fundamental principles, basic experimental research methods, elementary techniques of contingency engineering, and historical and philosophical perspectives and trends.

BEHG 345: *Applied Science and Technology of Behavior* (equivalent to TIBI's BEHG 102: Introduction to Behaviorology II [in 2016, updated to BEHG 211: Introduction to Behaviorology II]). *Description:* This course, the second of a two-course sequence, provides students with more disciplinary components including general applications of the principles of behaviorology focusing on a range of problem prevention and intervention techniques and considerations (e.g., ethics) in a range of settings.

BEHG 365: *Contingency Engineering: Rehabilitation* (equivalent to TIBI's BEHG 400: Behavioral Rehabilitation [in 2016, updated to BEHG 465: Behavioral Rehabilitation]). *Description:* While the original title was slightly different, this course provides students with the application of behavioral considerations to help improve human interactions and success rates in institutional rehabilitation settings such as hospitals and prisons. The course emphasizes the use of the more effective, science-based practices to replace the unscientific emphasis on coercive practices in these settings. Both adult and youth clients and offenders receive consideration.

BEHG 375: *Basic Autism ABA Methods* (equivalent to TIBI's BEHG 415: Basic Autism Intervention Methods [in 2016, updated to BEHG 405: Basic Autism Intervention Methods]). *Description:* This course provides students with the contingency engineering knowledge, practices, and skills valued in the recovery of children from autism. Topics include (a) the different roles of professionals, paraprofessionals, and school systems, (b) training curricula and programs, (c) home-based and center-based programs, and (d) the organizational and legal supports available to children with autism and their families, along with other topics.

BEHG 455: *Performance Management and Preventing Workplace Violence* (equivalent to TIBI's BEHG 420 under the same title [in 2016, updated to BEHG 435 under the same title]). *Description:* This course provides students with three levels of application of behavioral considerations appropriate to preventing workplace violence. The most general level examines the role that punishment and coercion play in prompting violence of all types throughout society. The middle level focuses on the use of effective behavioral practices for performance management in the full range of workplace settings to replace the unscientific emphasis on coercive management practices thereby *preventing* the violence such practices may themselves induce. The most specific level focuses on the various recommended policies and procedures for *detering* the actual occurrence of incipient workplace violence.

BEHG 465: *Classroom Management and Preventing School Violence* (equivalent to TIBI's BEHG 425: Non-

Coercive Classroom Management and Preventing School Violence [in 2016, updated to BEHG 425: Classroom Management and Preventing School Violence]). *Description:* This course provides students with three levels of application of behaviorological considerations appropriate to preventing school violence. The most general level examines the role punishment and coercion play in prompting violence of all types throughout society, from interpersonal and family relations, through educational and workplace situations, to international and cultural relations. The middle and most significant level focuses on the use of effective, non-coercive behaviorological practices and skills for classroom management. These replace the unscientific emphasis on coercive classroom “discipline” practices thereby *preventing* the violence such practices may themselves induce. The most specific level focuses on the various recommended policies and procedures for *detering* the actual occurrence of school violence in situations where violence has become likely.

TIBI offers each of its courses online (see www.behaviorology.org) and at different times SUNY-Canton has offered its behaviorology courses online and face-to-face. Of course, the progress of getting courses approved did not occur in a vacuum. Several factors came together to enable such success. Some of these are generally available to other behaviorologists, or can be arranged. Others can be unique to a particular institution.

Examples of the Expansion of Educational Opportunities

The stories of two behaviorology curriculum developers, Stephen Ledoux and James O’Heare, provide appropriate examples of the contingency history of behaviorology course developments. Thanks to the coincidences of history, their stories were not just available but were available in some detail, as the authors of this paper. [O’Heare’s story appears in Part II.]

Stephen Ledoux and SUNY-Canton’s later behaviorology courses and early curricular components. A range of contingencies resulted in the start of university-based behaviorology educational opportunities. As illustrated by the experiences of the first author, these included seven early behaviorology courses at SUNY-Canton. Here is the story behind not only those seven but also seven later courses that arose as parts of behaviorology curriculum options.

Stephen Ledoux’s course and curriculum development story begins in 1987, the same year as the formal organizing of the natural science of behavior under the behaviorology label, which was about ten years before the current successes began. He had arrived at SUNY-Canton in 1982, and five years later, early in 1987, he took what he thought was a small, simple step to begin

the process of shaping a program option for students interested in the natural science of behavior (even before the official use of the behaviorology label): he proposed a typical “psychology—behavior modification” course. His department approved the proposal at least three times, although not unanimously as psychology instructors were department members and some opposed the proposal (i.e., they could not even deal with “behavioral psychology”). Indeed, one psychologist was so convinced of the horror of anything even remotely behavioral that he did an end-run around the department, directly lobbying the Dean to quash the proposal. This psychologist’s views on operant conditioning typified a more general psychology perspective; rather than viewing operant conditioning as an ongoing process occurring on a moment by moment basis from before people are born until they die, this psychologist repeatedly insisted in public that operant conditioning only applied to training circus animals and children with autism. While such antics were part of the contingency components driving the local behaviorology developments (i.e., perhaps they helped compel the continuation of Ledoux’s efforts) the actual extent of their effects is difficult to measure. For whatever reason, the Dean at the time was disinclined to move the course forward, and stalled it permanently. Little else of obvious impact happened at SUNY-Canton over the next ten very long years.

During those intervening years, however, a variety of events accumulated which prepared a foundation for the possible success of renewed efforts. For instance, as his TIBA presidential address, Ledoux (2015b) developed a set of consensus-based behaviorology curricula to begin answering the questions of “what to condition in behaviorology training time when we behaviorologists are responsible for *all* of it. How should behaviorologists be trained?” (p. 174). The publication of that paper in the first edition (1997) of a book on the broad components of the behaviorology discipline (Ledoux, 2015f) caught his administrators’ attention when the administrator received a complimentary copy.

Also, when Ledoux returned from an academic year teaching in China (1990–1991), he reported the speed with which his three invited behaviorology course proposals (two graduate courses—one on verbal behavior and one on educational behaviorology—and one undergraduate course, also on the latter) were approved and scheduled; the whole process took less than three weeks! This too grabbed some administrative attention.

Three other factors lent credibility to development efforts. One was the already mentioned incorporation of TIBI with the consent of the New York State Education Department. Another was the separate existence of another behaviorology professional organization, ISB, and Ledoux’s circulating each organization’s newsletters as

they arrived, along with demonstrating TIBI's web site. A third was TIBI's successful proposal to SUNY-Canton that the two co-sponsor visiting scholars from China who were interested in coming here to study behaviorology. The first visiting scholar, Professor Ma Wen (see Ma, 1998, 1999; MA & Li, 2000) earned TIBI's *Professional Studies in Behaviorology Certificate* (PSBC). The second visiting scholar from China, Professor Li Fangjun (see Li, 2000) arrived at the college in August 2001 for the 2001-2002 academic year. Before returning to China, Professor Li also earned TIBI's PSBC.

In the same time frame, other events occurred that also increased the chances of success for renewed development efforts. For instance, SUNY-Canton received approval to begin offering four-year "Bachelor of Technology" (BT) degrees. This approval instantly created the need for upper division courses to support such degree programs. (And, in a cash-strapped college environment, development efforts are certainly not hurt by SUNY allocating more dollars to campuses for their upper division courses.) Also, local employers were weighing in with letters supporting behaviorology courses in terms of the number of behaviorology-knowledgeable students these employers would hire annually if they could. Such letters arrived from local agencies including SLNYSARC (St. Lawrence New York State ARC) and United Helpers. The BOCES (Board of Cooperative Educational Services) school-age program similarly weighed in some years later. These agencies, as major county employers, serve special needs populations including developmentally disabled and adults and children with autism.

The local chapter of Families for Early Autism Treatment (FEAT) also provided support for behaviorology development efforts. This contributed to the success of an application for a three-year grant from VESID (the office of Vocational and Educational Services to Individuals with Disabilities of the New York State Education Department). The New York State Department of Health had, in 1999, released its early-intervention clinical practice guidelines, after reviewing all of the available research literature on treatments and interventions for autistic children (see NYS Department of Health, 1999). These guidelines stated, among other things, that the only intervention with enough scientific evidence for safety and efficacy, such that it should be a required part of intervention components for young autistic children, is—using the older term available in this literature—ABA (Applied Behavior Analysis). Subsequently, VESID put out a call for grant applications to help autistic children through more widespread contact with ABA.

Ledoux responded to VESID's call by successfully applying for a three-year grant to organize and provide a set of courses that led to two local certificates. One certificate was for *Parents/Paraprofessionals* and the

other certificate was for *Educators*. Both had the title *Local Certificate of Accomplishment in Effective Autism Intervention*. This local SUNY-Canton certificate documented that a student had taken and passed certain courses in basic knowledge and skills related to autism intervention. During the three years of the grant, Ledoux assembled and taught the five courses that became part of these two certificates. Both certificates had three courses in common. Using just course numbers and names, the three shared behaviorology courses were (a) 245—*Introduction to the Science and Technology of Behavior*; (b) 345—*Applied Science and Technology of Behavior*; and (c) 375—*Basic Autism ABA Methods*. For the certificate for parents and paraprofessionals, the fourth course was 135—*Parenting Knowledge and Skills*, while for the certificate for educators, the fourth course was 465—*Classroom Management and Preventing School Violence*. (The contents of these courses is available online at www.behaviorology.org in TIBI's course syllabi.)

The availability of these local certificates provided even more support for further behaviorology curricular developments. (Again, for curricular recommendations as of spring 2015, after 25 years of behaviorology curriculum development experience at SUNY-Canton, see the *Addendum* to Appendix 3, in Ledoux, 2015f.)

At the same time as renewed behaviorology-development efforts went forward, SUNY-Canton was also becoming increasingly interested in two related areas, both of which supported such efforts. One was in offering online courses in general. This is something for which most behaviorology courses are well-suited, since the discipline itself would be applied in teaching them (as it is the most effective informing science for education, using the shaping model of education rather than the presentation model; see Vargas, E., 1996; also see Vargas, J., 2013). And TIBI was offering online behaviorology courses already. The other area of interest for SUNY-Canton was in offering online courses to China in particular. The college had received a grant to arrange such courses and Ledoux had substantial experience both with China and with some of the online course areas of probable interest to Chinese universities: applied behaviorology (Ledoux, 2015c) and verbal behavior (see Peterson & Ledoux, 2014).

When the Dean scheduled any of the first seven courses, various steps helped to improve their chances of success (i.e., attracting enough students). One step involved enabling a couple of behaviorology courses to meet the same general education requirements that some other so-called behavior-focused courses met (e.g., an intro psych course). Another step involved producing and distributing one-page flyers to assure that students and advisors were aware, during each pre-scheduling time for the following term, of the behaviorology courses being offered.

With only one full-time behaviorology professor (Ledoux) seven behaviorology courses is probably too many when all need to be taught, some every term, others at least occasionally, and all perhaps both face-to-face and online. Thus, over time, some of the local agency staff who supported behaviorology, including some Board Certified Behavior Analysts (BCBA) and Licensed Behavior Analysts (LBA) began to teach an occasional course on an adjunct basis (including Mr. Barry Berghaus; Mr. Chris Cryer, BCBA, LBA; and Ms. Joyce Trzaskos, BCBA).

(Part II of this paper will [a] complete the discussion of the BA-equivalent curricular component at SUNY-Canton, [b] review some behaviorological advances in the educational curricula for training companion animals, [c] list some examples of behaviorological books and articles appearing since 1990, and [d] describe some other developments occurring also in this time frame. While each of the two Parts of this paper includes the references to works that each has cited, only Part II includes the Endnotes for both Parts.)✻

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Syllabus Directory*

The most recent issue of *Journal of Behaviorology* that features a Syllabus Directory contains two lists of TIBI's current course syllabi. These lists show where to find the most up-to-date versions of these syllabi in number, title, and content. The first list organizes the syllabi by numerical course number. The second list organizes the syllabi by the chronological volume, number, and pages where you can find each course syllabus.

Each of these syllabi contain only information explicit to a particular course. You will find all the relevant generic information in the article, *General Parameters & Procedures for Courses from The International Behaviorology Institute*, in *Journal of Behaviorology*, Volume 18, Number 2 (Spring, 2015) pp. 3-6.

Current Syllabi by Course Number

- BEHG 100: *Child Rearing Principles and Practices*;
Volume 19, Number 2 (Fall 2016) 3-5.
- BEHG 110: *Introduction to Behaviorology Terminology*;
Volume 20, Number 1 (Spring, 2017) 19-21.
- BEHG 210: *Introduction to Behaviorology I*;
Volume 19, Number 2 (Fall 2016) 6-8.
- BEHG 211: *Introduction to Behaviorology II*;
Volume 19, Number 2 (Fall 2016) 9-12.
- BEHG 330: *Companion Animal Training*;
Volume 19, Number 2 (Fall 2016) 13-15.
- BEHG 340: *Introduction to Verbal Behavior*;
Volume 19, Number 2 (Fall 2016) 16-18.
- BEHG 350: *Behaviorology Philosophy and History*;
Volume 20, Number 1 (Spring, 2017) 22-24.
- BEHG 405: *Basic Autism Intervention Methods*;
Volume 19, Number 2 (Fall 2016) 19-21.
- BEHG 425: *Classroom Management and Preventing School Violence*;
Volume 19, Number 2 (Fall 2016) 22-24.
- BEHG 430: *Resolving Problem Animal Behavior*;
Volume 20, Number 1 (Spring, 2017) 25-28.
- BEHG 435: *Performance Management and Preventing Workplace Violence*;
Volume 19, Number 2 (Fall 2016) 25-27.
- BEHG 455: *Behaviorological Thanatology and Dignified Dying*;
Volume 19, Number 2 (Fall 2016) 28-31.
- BEHG 465: *Behaviorological Rehabilitation*;
Volume 19, Number 2 (Fall 2016) 32-34.

- BEHG 480: *Green Contingency Engineering*;
Volume 20, Number 1 (Spring, 2017) 29-31.
- BEHG 512: *Advanced Behaviorology I*;
Volume 19, Number 2 (Fall 2016) 35-37.
- BEHG 513: *Advanced Behaviorology II*;
Volume 19, Number 2 (Fall 2016) 38-40.
- BEHG 541: *Advanced Verbal Behavior*;
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- BEHG 100: *Child Rearing Principles and Practices*;
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- BEHG 465: *Behaviorological Rehabilitation*;
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*All of these TIBI course syllabi were either updated in 2016 or new in 2017. Many have older version appearing in earlier issues under different course numbers; see the *Syllabus Directory* in Volume 18, Number 1 (Spring 2015) for details.

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TIBI/TIBIA Purposes*

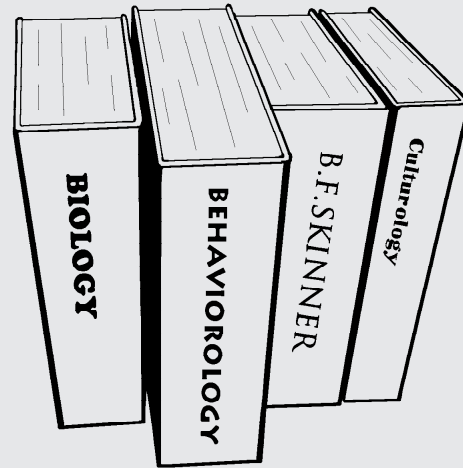
T_I**B**_I, as a non-profit educational corporation, is dedicated to many concerns. TIBI is dedicated to teaching behaviorology, especially to those who do not have university behaviorology departments or programs available to them. TIBI is also dedicated to expanding and disseminating the behaviorological literature at least through the fully peer-reviewed *Journal of Behaviorology* (originally called *TIBI News Time* and then *Behaviorology Today*) with editors being appointed by the TIBI Board of Directors, usually from among the TIBIA Advocate members. TIBI is a professional organization also dedicated to organizing behaviorological scientists and practitioners into an association (The International Behaviorology Institute Association—TIBIA) so they can engage in coordinated activities that carry out the purposes of TIBI/TIBIA. These activities include (a) encouraging and assisting members to host visiting scholars who are studying behaviorology as well as holding conventions and conferences; (b) enabling TIBI faculty to arrange or provide training for behaviorology students; and (c) providing TIBI certificates to students who successfully complete specified behaviorology curriculum requirements). And TIBI is a professional organization dedicated to representing and developing the philosophical, conceptual, analytical, experimental, and technological components of the discipline of behaviorology, the comprehensive natural science discipline of the functional relations between behavior and independent variables including determinants from the environment, both socio-cultural and physical, as well as determinants from the biological history of the species. Therefore, recognizing that behaviorology's principles and contributions are generally relevant to all cultures and species, the purposes of TIBI and TIBIA are:

A. to foster the philosophy of science known as radical behaviorism;

- B. to nurture experimental and applied research analyzing the effects of physical, biological, behavioral, and cultural variables on the behavior of organisms, with selection by consequences being an important causal mode relating these variables at the different levels of organization in the life sciences;
- C. to extend technological application of behaviorological research results to areas of human concern;
- D. to interpret, consistent with scientific foundations, complex behavioral relations;
- E. to support methodologies relevant to the scientific analysis, interpretation, and change of both behavior and its relations with other events;
- F. to sustain scientific study in diverse specialized areas of behaviorological phenomena;
- G. to integrate the concepts, data, and technologies of the discipline's various sub-fields;
- H. to develop a verbal community of behaviorologists;
- I. to assist programs and departments of behaviorology to teach the philosophical foundations, scientific analyses and methodologies, and technological extensions of the discipline;
- J. to promote a scientific "Behavior Literacy" graduation requirement of appropriate content and depth at all levels of educational institutions from kindergarten through university;
- K. to encourage the full use of behaviorology as the essential scientific foundation for behavior related work within all fields of human affairs;
- L. to cooperate on mutually important concerns with other humanistic and scientific disciplines and technological fields where their members pursue interests overlapping those of behaviorologists; and
- M. to communicate to the general public the importance of the behaviorological perspective for the development, well-being, and survival of humankind.

*Adapted from the 2017–updated TIBI By-Laws.☪

ABOUT
BEHAVIOROLOGY,
TIBI, AND
Journal of Behaviorology



BEHAVIOROLOGY IS AN INDEPENDENTLY ORGANIZED DISCIPLINE FEATURING THE NATURAL SCIENCE OF BEHAVIOR. BEHAVIOROLOGISTS STUDY THE FUNCTIONAL RELATIONS BETWEEN BEHAVIOR AND ITS INDEPENDENT VARIABLES IN THE BEHAVIOR–DETERMINING ENVIRONMENT. BEHAVIOROLOGICAL ACCOUNTS ARE BASED ON THE BEHAVIORAL CAPACITY OF THE SPECIES, THE PERSONAL HISTORY OF THE BEHAVING ORGANISM, AND THE CURRENT PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH BEHAVIOR OCCURS. BEHAVIOROLOGISTS DISCOVER THE NATURAL LAWS GOVERNING BEHAVIOR. THEY THEN DEVELOP BENEFICIAL BEHAVIOROLOGICAL–ENGINEERING TECHNOLOGIES APPLICABLE TO BEHAVIOR–RELATED CONCERNS IN ALL FIELDS INCLUDING CHILD REARING, EDUCATION, EMPLOYMENT, ENTERTAINMENT, GOVERNMENT, LAW, MARKETING, MEDICINE, AND SELF–MANAGEMENT.

BEHAVIOROLOGY FEATURES STRICTLY NATURAL ACCOUNTS FOR BEHAVIORAL EVENTS. IN THIS WAY BEHAVIOROLOGY DIFFERS FROM DISCIPLINES THAT ENTERTAIN FUNDAMENTALLY SUPERSTITIOUS ASSUMPTIONS ABOUT HUMANS AND THEIR BEHAVIOR. BEHAVIOROLOGY EXCLUDES THE MYSTICAL NOTION OF A RATHER SPONTANEOUS ORIGINATION OF BEHAVIOR BY THE WILLFUL ACTION OF ETHEREAL, BODY–DWELLING AGENTS CONNOTED BY SUCH TERMS AS *mind*, *psyche*, *self*, *muse*, OR EVEN PRONOUNS LIKE *I*, *me*, AND *you*.

AS PART OF THE ORGANIZATIONAL STRUCTURE OF THE INDEPENDENT NATURAL SCIENCE OF BEHAVIOR, *The International Behaviorology Institute* (TIBI), A NON–PROFIT ORGANIZATION, EXISTS (A) TO ARRANGE PROFESSIONAL ACTIVITIES FOR BEHAVIOROLOGISTS AND SUPPORTIVE OTHERS, AND (B) TO FOCUS BEHAVIOROLOGICAL PHILOSOPHY AND SCIENCE ON A BROAD RANGE OF CULTURAL CONCERNS. AND *Journal of Behaviorology* IS THE REFERRED JOURNAL OF THE INSTITUTE. JOURNAL AUTHORS WRITE ON THE FULL RANGE OF DISCIPLINARY TOPICS INCLUDING HISTORY, PHILOSOPHY, CONCEPTS, PRINCIPLES, AND EXPERIMENTAL AND APPLIED RESEARCH. JOIN US AND SUPPORT BRINGING THE BENEFITS OF BEHAVIOROLOGY TO HUMANITY. (CONTRIBUTIONS TO TIBI OR TIBIA—THE PROFESSIONAL ORGANIZATION ARM OF TIBI—ARE TAX DEDUCTIBLE.)☺

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