

Behaviorology Today

ISSN 1536-6669

Magazine of TIBI: The International Behaviorology Institute

Behaviorology

Conductologia

Xingwei Xue

Gedragsologie

Behaviourology

ABOUT 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 BEHAVIOR-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*.

AMONG BEHAVIOR SCIENTISTS WHO RESPECT THE PHILOSOPHY OF NATURALISM, TWO MAJOR STRATEGIES HAVE EMERGED THROUGH WHICH THEIR RESPECTIVE PROPONENTS WOULD HAVE THE NATURAL SCIENCE OF BEHAVIOR CONTRIBUTE TO THE CULTURE. ONE STRATEGY IS TO WORK IN BASIC NON-NATURAL SCIENCE UNITS AND DEMONSTRATE TO THE OTHER MEMBERS THE KIND OF EFFECTIVE SCIENCE THAT NATURAL PHILOSOPHY CAN INFORM. IN CONTRAST, BEHAVIOROLOGISTS ARE ORGANIZING AN ENTIRELY INDEPENDENT DISCIPLINE FOR THE STUDY OF BEHAVIOR THAT CAN TAKE ITS PLACE AS ONE OF THE RECOGNIZED BASIC NATURAL SCIENCES.

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NOTE: This issue does not contain any TIBI online course syllabus. In some future issues, new syllabi or updates of previous syllabi will appear. (See the *Syllabus Directory* near the back of each issue.)—Ed.

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Volume 15 Number 1 Contents Plan

Here are some of the featured items planned for the next issue (Spring 2012) of *Behaviorology Today*, although these plans may change:

✦ *Current Views on Language Development*
(Barry J. Berghaus)

✦ *Eliminate the Negative*
(Glenn I. Latham)

✦ An article or two from among those that may be in process from various guest authors. *When will YOUR article arrive?* (Staff writers can maintain the publication schedule with worthy contributions, but worthy articles from guest authors make even more valuable disciplinary literature contributions.)—Ed. ☺

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A New Look at Attachment Theory & Adult “Attachment” Behavior

Barry J. Berghaus

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The original work on attachment theory occurred during the period of time when behaviorology and psychology shared their history as two incommensurable disciplines under the initial disciplinary label, psychology (see Ledoux, 1997/2002, for an overview of this situation; see Fraley & Ledoux, 1997/2002, for details). Since then, most of the efforts to apply attachment theory have occurred well within the traditional psychology field where scientific progress is constrained by unending commitments to mystical, untestable, redundant agential origins of people's activities (Fraley, 2008). This paper considers that if scientific progress can or is to be made with attachment theory, that progress will more likely occur by reexamination through behaviorological analysis and research.

Introduction

Attachment theory has many proponents. Its simplicity makes it attractive to social, developmental, and clinical behaviorologists and psychologists. Over the past 20 years, attempts have been made to extend the premises of attachment theory into adult relationships of all kinds including, for example, workplace behaviors. Much has been written about early attachment and its role in psychopathology in children and adults. This paper examines some of the strengths and weaknesses of attachment theory and suggests that it could be made better by abandoning internal working models.

“Attachment theory is the joint work of John Bowlby and Mary Ainsworth” (Bretherton, 1992). Bowlby began his studies of attachment when he researched the earliest developmental origins of childhood and psychopathology at London's Tavistock Clinic (Berman & Sperling, 1994, p. 3). Mary Ainsworth's contributions, including her *Strange Situation* research methodology and child development orientation, propelled attachment theory into the mainstream of child development and social psychologies. The roots of their work on, and thinking about, attachment

theory can be traced back to the 1940s and 1950s, but formal presentations of their research and hypotheses started in 1957 and extended through the 1980s. In the 50 years since Bowlby and Ainsworth's initial work in attachment theory, its basic premises have become well recognized and largely accepted into mainstream psychology and into popular culture as well. More recent theoretical and research interests have been directed toward “the relationship between parent-child attachment and adult relationships and psychopathology” (Berman & Sperling, 1994, pp. 3-4; for other examples, see Bretherton, 2003; Hazen & Shaver, 1990; Simonelli, Ray, & Pincus, 2004).

If anyone doubts the impact attachment theory has had on psychology during the past fifty years, one has only to go to the World Wide Web to discover the volume of books, journal articles, and essays currently available. For example, a Google search of “attachment theory” produced 1,590,000 hits. The same search at Academic Search Premier yielded 4,667 hits of articles currently in the data base; 3,809 of those were published within the last ten years. Also, the Barnes and Noble website (www.barnesandnoble.com) lists 193 book titles related to attachment theory. Attachment theory is covered routinely in current textbooks in social, child, adult, and life-span development psychologies. In fact, Simonelli, Ray, and Pincus (2004) write, “Attachment theory has become the dominant approach in understanding interpersonal relationships.”

Several authors suggest that there is clinical utility in employing the framework of attachment theory to the diagnosis and treatment of psychological problems in teens and adults. (For some examples, see Adam, 1994, who discusses suicide and attachment; Parker, 1994, who discusses depression and attachment; West & Keller, 1994, who discuss attachment and personality disorders; Sperling & Lyons, 1994, who discuss attachment theory representations in psychotherapeutic change; and Rholes & Simpson, 2004, who discuss such things as the influences of attachment on cognitive functioning, implications for the ways individuals experience intimacy and conflict in adult relationships, and how attachment theory can inform the clinician's understanding of such significant clinical problems as depression and post traumatic stress disorder.)

Since attachment theory and, more recently, its applicability to adult relational behavior have been so generally accepted, it seems important for students of behavior to look carefully at the objective scientific evidence that supports or questions the premises of attachment theory, and also to look at possible alternative explanations for the findings reported in attachment literature.

Discussion

Attachment Theory: John Bowlby's Contributions

John Bowlby's (1907–1990) work on the earliest developmental origins of childhood and adult psychopathology provided the foundation for the study and conceptualization of attachment theory (Bretherton, 1992). The titles of his early works reveal his developing interest in attachment and separation and their effects on child development and psychopathology (for example, a 1953 article entitled “Some pathological processes set in train by early mother–child separation” [Bowlby, 1953]). By 1940, Bowlby was already expressing the ideas that were to become attachment theory (Bowlby, 1940, as cited in Bowlby's Biography, n.d.). Bowlby believed that psychoanalysis was putting too little emphasis on actual events in the lives of children and too much emphasis on their fantasy lives. He is quoted as saying, “psychoanalysts like the nurserymen should study intensively, rigorously, and at first hand, the nature of the organism, the properties of the soil and the interaction of the two” (Bowlby's Biography, n.d.). In this regard, Bowlby seems to have been influenced by the behaviorists and natural scientists of his day who believed that human behavior could be better understood by naturalistic analyses rather than by symbolic explorations of introspectively derived psychodynamic operations (see Ledoux, 1997/2002).

During his early years at the Tavistock Clinic (Bowlby became head of the children's department there in 1945), Bowlby was disappointed that much of the clinical work being done with disturbed children was based on Kleinian psychoanalysis which regarded actual family interactions as completely irrelevant to children's behavior. He was deeply interested in discovering the actual family interaction patterns involved in both normal and pathological childhood development (Bowlby's Biography, n.d.).

Bowlby focused his research efforts on mother–child separation because the separation event is well–defined and clear–cut, and either happens or does not (Bowlby's Biography, n.d.). As such, Bowlby introduced scientifically objective environmental observations into a previously subjective world where “research” was largely done by case studies based of symbolic introspections and psychoanalytically based interpretations of interactions between analyst and patient. Interestingly, however, Bowlby's colleague James Robertson “had obtained his training in observation while working (as a boilerman [Bretherton, 1992]) at Anna Freud's residential nursery for evacuated children where all members of the staff, no matter what their job description, were required to write their obser-

vations on cards to be used in subsequent discussion of the children's development” (Bretherton, 2003).

Bowlby's first presentation of formal attachment theory occurred before the British Psychoanalytic Society in 1957. He presented a theory heavily influenced by ethology, especially Konrad Lorenz's studies of imprinting (Bretherton, 2003) and Harry Harlow's studies of monkeys with surrogate “wire and cloth” mothers (Garelli, n.d.), and heavily critical of the psychoanalytic doctrine regarding the nature of a child's libidinal ties to the mother. The psychoanalytic explanations for the supposed libidinal ties to the mother, including theories of secondary drive, primary object sucking, primary object clinging, and a primary craving to return to the womb, made little sense in light of Bowlby's observations and ethological viewpoint. Needless to say, Bowlby's theory was not well received in psychoanalytic circles, being, as they were, still heavily influenced by Freud (Bowlby's Biography, n.d.).

By 1959, Bowlby and his colleague James Robertson had identified three phases of the separation response: (1) Protest (related to separation anxiety), (2) Despair (related to grief and mourning for the lost mother), and (3) Detachment or denial (related to defense). These proved the crucial point in Bowlby's attachment theory: “separation anxiety is experienced when attachment behavior is activated and cannot be terminated unless reunion is restored” (Bowlby's Biography, n.d.). Bowlby came to believe that separation anxiety was caused by adverse family experiences.

At the time, psychoanalysts believed children did not experience grief because of childhood narcissism. Anna Freud's view was that children were unable to mourn due to insufficient ego development and so experienced nothing more than brief periods of separation anxiety which abated whenever a satisfactory substitute caregiver became available. Melanie Klien believed that the loss of the breast was the most meaningful loss suffered during infancy. In direct opposition to the psychoanalysts of the day, Bowlby believed that childhood grief and mourning occurred whenever attachment behaviors were activated and the mother continued to be unavailable (Bowlby's Biography, n.d.).

Bowlby's rejection of mainstream psychoanalytic theory and insistence on objective environmental observations of family interactions are significant positive attributes of early attachment theory.

Attachment Theory: Mary Ainsworth's Contributions

Mary Ainsworth (1913–1999) is the other key figure in the foundation of attachment theory. In fact, Ainsworth's Uganda study—“the first developmental study viewing infant–mother attachment from an evolutionary perspec-

tive” (Bretherton, 2003)—which was begun in 1953, predated Bowlby’s presentation of his formal account of attachment theory to the British Psychoanalytic Society by four years.

However, Ainsworth’s work in Uganda was clearly influenced by her previous affiliation with Bowlby at the Tavistock Clinic. There, “Ainsworth became intrigued with Bowlby’s quest to find a more compelling explanation for young children’s distress in response to enduring separation from parents than the current view. This view, shared by psychoanalysts and learning theorists alike, was that babies became attached to their mothers because they (mothers) feed them and fulfill the babies’ other basic needs” (Bretherton, 2003). When she went to Uganda, Ainsworth was interested in studying the Ugandan tradition of sending infants away from the mother for a few days at weaning so that the infants will “forget the breast.” However, she quickly learned that most Ugandans had given up the tradition, so she began to carefully document the normative development and individual differences in infant–mother interactions (Bretherton, 2003).

Ainsworth finally presented findings from the Uganda study to Bowlby’s Mother–Infant Interaction Study Group in 1961. Even though her work was heavily influenced by Bowlby’s, her reception by the Study Group was lukewarm at best (Bretherton, 2003). It is clear that her thinking had been heavily influenced by William Emet Blatz, her doctoral mentor, founder of the Institute of Child Study at the University of Toronto, and the “Dr. Spock” of Canada. Blatz had proposed *security theory* in which “*secure dependence* on parents enables infants and young children to muster the courage to explore the unfamiliar, and thus to develop towards *independent security* (or self-reliance)” (Bretherton, 2003). Much of Ainsworth’s later thinking about primary caregivers as a *secure base* for exploration, and the ways in which some children mature into independent security while other do not, can be found in Blatz’s security theory.

Ainsworth’s most famous work, the Baltimore Study, was conducted at Johns Hopkins University and reported in several journal articles and book chapters, and in a book titled *Patterns of Attachment: A Psychological Study of the Strange Situation* (Ainsworth, Blehar, Waters, & Wall, 1978, as cited in Bretherton, 2003) where Ainsworth summarized her findings and thinking about attachment (Bretherton, 2003).

For the Baltimore study, Ainsworth and her colleagues recruited 26 families through their pediatricians. They visited each family once a month for a year with each visit lasting four hours. Observers noted interactions between infants and their mothers in shorthand during their observations and dictated a detailed narrative into a tape recorder immediately after each session. The recorded narratives became the basis for data analysis. Data

collection was completed in 1966. “Analyses of mother–infant interaction sequences during feeding, close body contact, face-to-face play, and crying yielded clear evidence that when a mother responded to her infant with sensitive responsiveness during the first three months of life, the pair had a more harmonious relationship during the last quarter of the first year” (Bretherton, 2003).

In an article discussing the findings of the Baltimore Study, Bell and Ainsworth (1972, as cited in Bretherton, 2003) reported that a mother’s prompt and sensitive response to crying during an infant’s early months of life resulted in less crying later in the first year. This finding seemed to contradict the learning theories of the day; what are usually observed to be reinforcing (i.e., rate-increasing) consequences of crying seemed instead to be resulting in less crying rather than more. However, the status of the studied crying as respondent behavior or operant behavior received inadequate attention perhaps because the differences between respondent behavior and operant behavior, including crying behavior, were not yet well analyzed, although these have been more recently clarified (see Fraley, 2008). In any case, later researchers (for example, Hart & Risely, 1990, 1995; Flora, 2004) again reliably demonstrated that crying is reinforced by immediate parental responsiveness, and that responsive parents quickly shape communicative crying into more socially desirable behaviors—short communicative cries, communication, and talking.

It was near the end of the Baltimore Study that Ainsworth developed the *Strange Situation* which, if not her most important contribution to attachment theory, is probably her most famous. She was likely inspired by Harry Harlow’s experiments with infant rhesus monkeys in which he demonstrated that infant monkeys explored more when they were with a cloth mother than they did when with a wire mother. Ainsworth devised a controlled laboratory situation analogous to both Harlow’s monkey setup and real-life examples of human infant separation and attachment.

The Strange Situation as conceptualized by Ainsworth is essentially a 20 minute mini-drama with eight episodes. The infant and its mother are introduced to a laboratory playroom. Later they are joined by an unfamiliar woman. The strange woman plays with the infant and the mother leaves the room and then returns. A second separation occurs when the mother leaves the child alone in the room then returns with the stranger (Bretherton, 1992).

Ainsworth found that most one-year-old children explored the toys in the room, cried when their mothers left the room, sought brief interaction and settled upon the mother’s return, and then returned to room exploration. However, not all children followed the expected pattern. Some children appeared to snub the mother when she returned from her brief absence. They essentially ignored

her by looking away and refusing to interact even when the mother made attempts to interact with the child. A third and smaller group of children protested loudly when their mothers left the room, but appeared angry when she returned, even though they often attempted to make contact with their mothers. Ainsworth labeled the three groups as securely attached, avoidantly attached, and ambivalently attached, respectively (Bretherton, 2003).

It is important to note here that despite the plethora of research on attachment theory that has gone on since, much of what modern attachment theorists believe to be true about mother–infant attachments and their effects are based on Ainsworth’s single study of 26 Baltimore families. And much of what is believed about the purported effects of attachment on infant development is based on Ainsworth’s conclusions based on a single twenty minute Strange Situation conducted with each mother–infant pair at the end of the Baltimore study. It’s not that Ainsworth didn’t recognize the shortcomings of her single study and small sample size. She did, and in fact she intended to replicate her study, but was denied funding by a federal review panel which, “while respectful of her research capabilities, replied that there was no point in replicating something of so little value” (Karen, 1994, p. 172, as cited in Bretherton, 2003).

Attachment Theory: The Theory

Attachment theory “rests on the concept of an ‘attachment behavioral system’—a homeostatic process that regulates infant proximity-seeking and contact-maintaining behaviors with specific individuals to provide physical or psychological safety and security” (Berman & Sperling, 1994, p. 5). In general, behavioral systems are thought to be evolved, cybernetically-controlled systems that provide a clear adaptive benefit to individuals and species (Bretherton, 1992). As evolved systems, behavioral systems are likely to be expressed differently in different members of a species with some members displaying “more” and some “less.” They are also influenced by environmental factors so that their onset and offset may occur in response to specific environmental events, and they may change over time in response to environmental consequences, in both the species and in particular individuals (Bretherton, 1992; Garelli, n.d.).

Development of the putative attachment behavior system coincides with the development of locomotion and object permanence in infant humans (Berman & Sperling, 1994, p. 6). Onset, or activation, occurs whenever the infant is separated from the primary caregiver, and offset, or deactivation, occurs when the two are reunited. However, and importantly, the attachment behavior system is said to exist in opposition to an “exploration behavior system” that develops at around the same time and drives infants to explore the world.

The exploration behavior system is activated only when the infant is secure enough to explore safely. Onset of attachment produces offset of exploration, and offset of attachment allows onset of exploration.

Bretherton (1992) writes, “Complex behavior systems can work with foresight in organisms that have evolved the ability to construct internal working models of the environment and of their own actions in it.” Here, Bretherton presents a fundamental assumption of attachment theory—“in order to activate and deactivate the attachment system efficiently, the child must develop ‘internal working models’ of the attachment figure and of the self in interaction with the attachment figure” (Bowlby, 1988, as cited in Berman & Sperling, 1994, p. 6).

At this point a brief summary seems in order. Attachment theory says that humans evolved an attachment behavior system because it offers those who have it an evolutionary advantage, that is, infants who seek the closeness and security of their mothers (or other primary caregiver) are more likely to survive, and mothers who are responsive to their infant’s needs and provide security are more likely to have their infants survive, thereby passing on their genes. The attachment behavior system becomes active through the course of normal development at about the same time as the exploration behavior system which also provides evolutionary advantage for the developing infant by, for example, encouraging learning about the environment, muscle development, and the beginning stages of the separation that occurs when the child may leave mother and family to establish a family of his or her own. Both systems become active because of developmental changes in the infant such as locomotion and object permanence which facilitate the necessary behaviors within each system. However, the systems require a counterbalancing of opposing forces. As the infant engages in attachment behaviors with the caregiver, the infant experiences either responsiveness, rejection, or some combination of both. Eventually, the infant learns to predict caregiver responses based on actual experience. Those infants who most often experience responsiveness become securely attached; those infants who most often experience rejection become avoidant; and those infants who experience an unpredictable combination of both responsiveness and rejection become anxious and ambivalent. These experiences become transformed into the child’s internal working model of relational expectations. The internal working model carries the person’s expectations for all attachment relationships on into the future, and remains generally stable unless altered by significant new experiences.

Attachment Theory: Some Criticisms

Most theories have their proponents and detractors. Certainly that is the case with attachment theory. How-

ever, in many cases proponents become incautious apologists. That seems to be the case in attachment theory when proponents suggest, fairly commonly, that critics of attachment theory don't really understand the theory and its supporting evidence (for example, Bretherton, 1992, 2003; Sperling & Berman, 1994; Hazan & Shaver, 1990). At this point in the history of attachment theory, it would be nearly impossible to read every published article and book on the subject, so I concede that some critics, including this one, may remain unaware of all the research that's been reported. However, this does little to detract from the major criticisms of attachment theory which are based on what may be fundamental flaws in some major premises of attachment theory. In addition, these same proponents often point out attachment theory's utter simplicity, and recommend that as one of their theory's strengths (for example, Sperling & Berman, 1994, Bretherton, 1992). If the theory really is so simple (and it is certainly and admittedly more complex than the brief presentation made here), it seems unlikely that all of the theory's critics misunderstand the fundamentals of attachment theory. Perhaps some understand it too well.

Attachment theory may have some strengths. One strength may be its common sense appeal. In addition, many early studies in attachment followed the model provided by ethologists as they attempted to make objective observations of organisms as they behaved in their natural environments.

Bowlby may be credited with almost single-handedly changing the way the modern world looks at parenting roles (Bowlby's *Biography*, n.d.). He wrote, "The infant and young child should experience a warm, intimate, and continuous relationship with his mother (or permanent mother substitute) in which both find satisfaction and enjoyment" (Bowlby, 1951, p. 13, as cited in Bretherton, 1992). And equally impactfully, "Just as children are absolutely dependent on their parents for sustenance, so in all but the most primitive communities, are parents, especially mothers, dependent on the greater society for economic provision. If a community values its children it must cherish their parents" (Bowlby, 1951, p. 84, as cited in Bretherton, 1992). Statements like these were in direct opposition to the thinking and recommendations being made by most commentators of the day who often recommended distant and minimally responsive behavior on the part of parents. But as we can see, society has hardly heeded Bowlby's words (Bretherton, 1992).

"Mary Ainsworth contributed the concept of the attachment figure as a secure base from which an infant can explore the world. In addition, she formulated the concept of maternal sensitivity to infant signals and its role in the development of infant-mother attachment patterns" (Bretherton, 1992). Researchers far removed from attachment theory have reaffirmed Bowlby and Ainsworth's

findings. For example, Hart and Risley (1995, 1999) studied 42 families over 2.5 years and found that the number and quality of social interactions between parents and their children showed a strong positive relationship to later behavioral and developmental accomplishments, social behavior, and language abilities. In effect, they found that positive parenting behaviors produce much more than secure attachment (see Latham, 1994, 1991, 2010; Ledoux, 2000).

Harvard psychologist Jerome Kagan (1996) writes, "the concept of attachment has a noncontroversial, factual basis... it is reasonable to regard Bowlby's concept of the attachment bond, representing the product of the thousand or more hours of nurturing interactions between adults and infants during their first year, as a useful construct." Bowlby and Ainsworth were rigorous in their observations, data collection, and pursuit of objective measures. They based their theorizing on well documented facts from ethology, sociobiology, psychobiology, cybernetics, and general behavior theory (Garelli, n.d., Bretherton, 1992) as well as what they believed to be true from psychoanalysis and the modern approach to structural cognitive development theory (Garelli, n.d.). However, Bowlby and Ainsworth strayed from a natural science approach, and their followers have strayed further still.

Jerome Kagan, in his article "Three Pleasing Ideas" (Kagan, 1996) describes three attractive yet scientifically unsupported premises common in psychological theorizing. The first of these is what he calls the "unencumbered power of early experience" (the other two being "abstract processes" and "sensory pleasure as a primary motivator of behavior"—we will deal with the first of these later). Kagan (1996) writes that psychologists commonly believe "that the experiences of infants can create schemata, habits, and emotions that are enduring, perhaps indefinitely." This belief is seen clearly in the works of psychodynamic giants like Freud and Erikson, attachment theorists, early behaviorists, and nearly every other school of psychology. For example, Kagan (1996) cites Fogel (1991, p. 421) writing about attachment theory: "Individuals acquire particular expectations from their early social relationships that they then carry over to other relationships. Because internal working models are relatively stable and only get changed very slowly, they may account for the long term consistencies in attachment across time." The same belief is expressed here by Berman and Sperling (1994, p. 8):

Adult attachment is the stable tendency of an individual to make substantial efforts to seek and maintain proximity to and contact with one or a few specific individuals who provide the subjective potential for physical and/or psychological safety and security. The stable tendency is

regulated by internal working models of attachment, which are cognitive–affective–motivational schemata built from the individual’s experience in his or her interpersonal world.

Fogel and Berman and Sperling describe the foundational belief on which adult attachment is built—that internal working models are created early in life and affect behavior later in life. But the scientific evidence does not support that belief. Kagan (1996) writes, “Infant temperaments, based in part on inherited physiology, make a modest contribution to future behavior (Kagan, 1994), including reactions that are most often used to evaluate infant’s security of attachment (Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996).”

Even when adult attachment theorists admit that attachment styles don’t always remain stable into and through adulthood, they promptly ignore that fact and go on about their business of describing how attachment styles developed during the first year of life affect adult relationships (for example, Simonelli, Ray, & Pincus, 2004; Bretherton, 2003; Sperling & Berman, 1994; Hazen & Shaver, 1990). It is particularly unclear what effects early attachment interactions might have on relationships in older adults who are likely to have experienced a variety of types and levels of relationships with others.

In Bowlby’s *Biography* (n.d.) we find:

...scholars are currently almost exclusively working on instruments, such as questionnaires and interviews with adults; they have given up direct observations of children, and most important they have given up one of the most important tenets of Attachment Theory: that of replacing introspection by objective observation. As things stand right now, psychology as enhanced by Bowlby has backtracked to Freudian times, even Pre-Freudian times.

The extension of objectively derived data to adults, especially when backtracked from effects in adulthood to causes in childhood, is a decidedly unscientific pursuit depending on introspection and memory of vaguely defined experiences. And researchers know that no autobiographical memory for these early experiences exists since the most formative experiences in attachment are purported to have occurred during the first year of life.

Kagan (1996) points out another belief commonly held by psychologists but not supported by scientific evidence, the almost casual acceptance of abstract processes. He writes:

A second favorite premise is the positing of highly abstract psychological processes, such as attention, learning, regulation,

memory, and fear, that fail to specify the species or the type of person being studied, the context of observation, and the evidence used to infer the process... Scientific theories must posit constructs that stand for presumed commonalities among related events. But scholars must not assume, unless the evidence is strong, that these invented constructs, most of which are impermanent, apply to agents and contexts that were not part of the original empirical foundation for the idea. (Kagan, 1996)

Furthermore, the continued allegiance to putative internal agents, agents that supposedly self-initiate behavior by telling the behaving body what to do, even further removes the topic from the context of natural science, since natural science by definition excludes all such mystical notions (Ledoux, 2002).

Attachment theorists simply accept/presume that internal working models exist, and from there assume that internal working models have a causal relationship with behavior. This is an example of the “transformation paradigm” (Fralely & Ledoux, 1997/2002). In the transformation paradigm, inputs (in the case of attachment theory, inputs would include parenting responses during the first few months of life) are somehow transformed into stored “internal working models,” (an example of Kagan’s first and second attractive ideas) somewhere in the “mind.” These transformed entities are later transformed yet again into behavior. However, since this processes responsible for these transformations cannot be objectively defined, measured, or quantified, and because the structures in which such transformed entities reside are purely hypothetical, the adherence to the transformation paradigm (and other concerns) prevents psychology from being a natural science. It therefore remains largely a philosophical (some commentators prefer superstitious; see Fralely, 2008) endeavor.

However, attachment theory does not require the transformation paradigm to be useful. As demonstrated by Ainsworth in her Baltimore study, inputs and outputs can be observed and measured objectively. Hart and Risley (1995, 1999) conducted many hours of observations, recorded and interpreted data, and published their results and conclusions which sound surprisingly like the conclusions reached by Bowlby and Ainsworth, yet they never resorted to abstractions and transformations to explain their results. That behavior is controlled by its environment is a well established fact in learning theory and behaviorology (Skinner, 1953; Fralely, 2008). No transformations are required to explain how parental interactions with their children affect their children’s behavior. Had Bowlby and Ainsworth not been so taken with psycho-

analysis, they may have been able to separate their scientific findings from their pseudoscientific beliefs and presented a theory devoid of mysticism and nonscientific premises. Had their successors been more attracted to scientific rather than mystical explanations of behavior, they may have avoided backtracking to pre-Freudian times.

Summary

Social critic Jane Jacobs, in her book *Dark Age Ahead* (2004) describes the problems societies face when they abandon science in favor of pseudoscientific and postmodernist thinking. She demonstrates how societies that have abandoned science have spiraled downward into dark ages and dissolution. Jacobs also describes how pockets of societies or even single professions have abandoned science and spiraled downward into irrelevance. She provides illuminating examples of the neglect of scientific principles in traffic engineering, community disease control, and economics. In each case she shows how professionals, while purporting to be scientists, ignored available scientific evidence and acting on unsubstantiated belief, made huge blunders that affected thousands of people, resulting in needless suffering and death. Jacobs provides a modern day cautionary tale revealing how postmodernist thinkers purport to be experts but practice something quite different from science. If psychology is to have any enduring relevance, it must certainly heed Jacob's warning instead of holding as it does to its mystical roots and promoting essential postmodernism by considering the discipline as an *eclectic aggregate* where nearly anything goes.

In science, good theories survive, poor theories are discarded. Some theories prove themselves to be better than others because of their ability to explain and predict and control phenomena. But more than this, good theories must be consistent with other scientific theories and follow basic laws of the universe.

Attachment theory may have its strengths, but its modern proponents have lost their way. As they try to make attachment related to everything that comes after, and a major component of psychopathology, they ignore much of the scientific evidence.

Perhaps, as Bowlby's contemporaries asserted (Bretherton, 1992); attachment theory really is too simple to explain adult relationships and psychopathology. Perhaps we should look to the many millions of interactions between children and their environments, including their interactions with their caregivers, to explain security and attachment, along with all of the rest of their development and behavior (Novak, 1996).✻

Endnotes

The original version of this paper was completed as part of the requirements for a doctoral graduate course at Capella University. Address correspondence to the author at 5325 State Highway 37, Ogdensburg NY 13669.

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Second Five-Year Index: Volumes 10–14

This is the second five-year index for *Behaviorology Today*. It lists the references to the main articles that appeared in volumes 10 through 14 (2007–2011). Most of the references are listed by volume in their order of inclusion in each issue. Where content is not clear from the title, an annotation is provided.

Occasionally, *Behaviorology Today* (BT) includes a piece that has gone through a full peer-review process. According to BT policy, when this is the case, a very clear notice to that effect is included with the piece.

The last index—which was the first five-year index, for volumes 5 through 9 (2002–2006)—appeared in Volume 9, Number 2, Fall 2006, pp. 32–34. (The main articles of volumes 1 through 4 [1998–2001], which appeared while the journal was called *TIBI News Time*, were included in volume 5 and the first five-year index.)

Some issues only show one or two articles in this index. However, these issues may also contain TIBI course syllabi. These syllabi are not included in this index because the list of syllabi (the *Syllabus Directory*) is printed at the back of each issue, with the most up-to-date *Syllabus Directory* at the back of the latest issue.✻

Volume 10 Number 1 (Spring 2007)

Fraley, L.E. (2007). **Personhood and superstition Part III [of IV]**. *Behaviorology Today*, 10 (1), 3–9.

✻ [Part I: 9 (1), 22–26; Part II: 9 (2), 3–9.] ✻

Fraley, L.E. & Ledoux, S.F. (2007). **Origins, status, and mission of behaviorology Chapter 3 (of 7)**. *Behaviorology Today*, 10 (1), 15–25.

✻ [Chapters 1 and 2: 9 (2), 13–32.] ✻

Volume 10 Number 2 (Fall 2007)

Fraley, L.E. (2007). **Personhood and superstition Part IV [of IV]**. *Behaviorology Today*, 10 (2), 3–8.

Fraley, L.E. & Ledoux, S.F. (2007). **Origins, status, and mission of behaviorology Chapter 4 (of 7)**. *Behaviorology Today*, 10 (2), 9–33 [with supplemental quotes].

Volume 11 Number 1 (Spring 2008)

Fraley, L.E. & Ledoux, S.F. (2008). **Origins, status, and mission of behaviorology Chapter 5 (of 7)**. *Behaviorology Today*, 11 (1), 3–30.

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Volume 11 Number 2 (Fall 2008)

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Volume 12 Number 1 (Spring 2009)

Fraley, L.E. (2009). **Natural science, superstition, and academic institutions Part II (of II)**. *Behaviorology Today*, 12 (1), 3–15 [with Editor's Supplement].

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Fraley, L.E. (2009). **The religious psychology student in a behaviorology course**. *Behaviorology Today*, 12 (2), 11–13.

Latham, G.I. (2009). **10 steps to self-esteem**. *Behaviorology Today*, 12 (2), 13–14.

Volume 13 Number 1 (Spring 2010)

- Ledoux, S.F. (2010). **Increasing tack control and student comprehension through such new postcedent terms as added and subtracted reinforcers and punishers.** *Behaviorology Today*, 13 (1), 3-6. [Fully peer-reviewed.]
- Fraley, L.E. (2010). **Two behaviorology measurement projects for behaviorology graduate students.** *Behaviorology Today*, 13 (1), 7-10.
- Berghaus, B.J. (2010). **Research needed on behavior skills training to teach young workers workplace safety skills.** *Behaviorology Today*, 13 (1), 10-14.

Volume 13 Number 2 (Fall 2010)

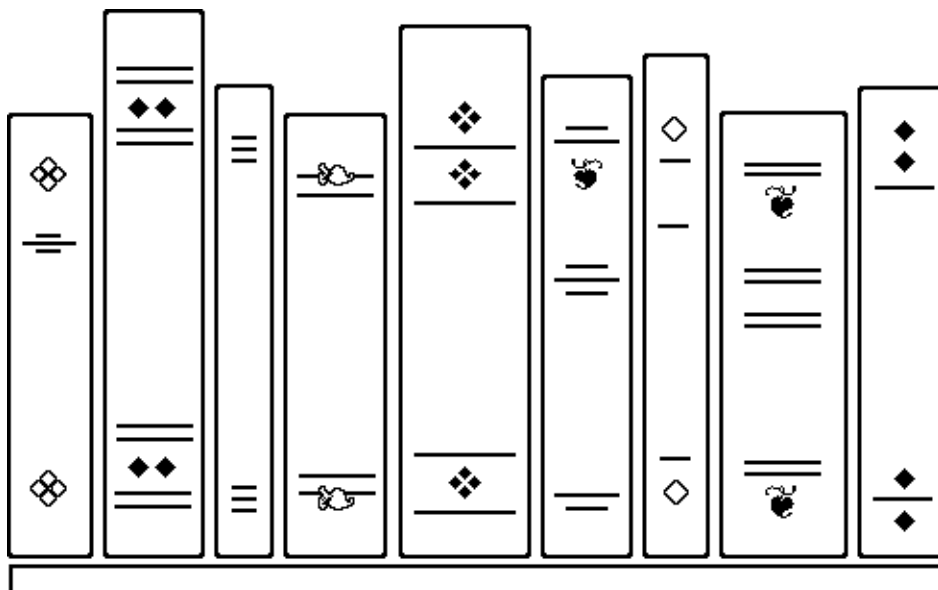
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Volume 14 Number 1 (Spring 2011)

- Ledoux, S.F. (2011). **Successful smoking control as an example of a comprehensive behaviorological therapy.** *Behaviorology Today*, 14 (1), 3-13.
- Latham, G.I. (2011). **Using parenting prescriptions in real life.** *Behaviorology Today*, 14 (1), 14.
- Fraley, L.E. (2011). **Social implications of the variable ratio schedule.** *Behaviorology Today*, 14 (1), 15-18.
- Fraley, L.E. (2011). **Quoted.** *Behaviorology Today*, 14 (1), 18. [From the third footnote, and its source paragraph, in Chapter 18 ("Adjunctive Behavior") of the 30-chapter book: Fraley, L.E. (2008) *General Behaviorology: The Natural Science of Human Behavior* (p. 593; Canton, NY: ABCs), this quote relates an appropriate connection among ignorance, science, and determinism.]

Volume 14 Number 2 (Fall 2011)

- Berghaus, B.J. (2011). **A new look at attachment theory and adult "attachment" behavior.** *Behaviorology Today*, 14 (2), 3-10.
- Ledoux, S.F. (2011). **Some historical photographs.** *Behaviorology Today*, 14 (2), 17-18. ☺



Some Historical Photographs

*These photographs record points of time in the early history of the behaviorology movement. They first appeared on pages 171 and 172 of the first edition (1997) of the book *Origins and Components of Behaviorology* (current reference: Ledoux, S.F. [2002]. *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs). ☺*



Photo by Stephen F. Ledoux

Most participants at the first TIBA convention, Potsdam, NY, USA, August 1988.

Douglas Greer	Ernest Vargas	Jack Michael		John Stone	Scott Beach	
		Lawrence Fraley		Laura Dorow		
Jerome Ulman	Al Kearney		Robert Spangler		Carl Cheney	
Sigrid Glenn	Guy Bruce				Julie Vargas	Juan Robinson
Stephen Ledoux		Jeffrey Kupfer		John Eshleman	Linda Armendariz	



Photo by Stephen F. Ledoux

Participants at the TIBI Executive Board subcommittee meeting, Waltham, MA, USA, December 1987
[Left to right: Lawrence E. Fraley, Ernest A. Vargas, Julie S. Vargas and Stephen F. Ledoux]



Photo compliments of Carl D. Cheney

The authors of "Origins, Status, and Mission of Behaviorology" at TIBA-IV, New Orleans, LA, USA, January 1992 [Left to right: Lawrence E. Fraley and Stephen F. Ledoux]

Syllabus Directory

Each issue of *Behaviorology Today* contains three lists. These lists show where to find only the most up-to-date versions (in title and content) of TIBI's course syllabi. The first list shows syllabi located in the current issue or past issues. The second list shows the schedule (which may change) of syllabi to appear in some future issues. The third list repeats the syllabi locations (actual or planned) but by course number rather than by issue.

Up-To-Date Syllabi in Current or Past Issues

- Volume 7, Number 2 (Fall 2004): BEHG 101:
*Introduction to Behaviorology I.**
- Volume 7, Number 2 (Fall 2004): BEHG 102:
*Introduction to Behaviorology II.**
- Volume 7, Number 2 (Fall 2004): BEHG 201:
*Non-Coercive Child Rearing Principles and Practices.**
- Volume 7, Number 2 (Fall 2004): BEHG 355:
*Verbal Behavior I.**
- Volume 8, Number 1 (Spring 2005): BEHG 400:
Behaviorological Rehabilitation.
- Volume 8, Number 1 (Spring 2005): BEHG 415:
*Basic Autism Intervention Methods.**
- Volume 8, Number 1 (Spring 2005): BEHG 420:
*Performance Management and Preventing Workplace Violence.**
- Volume 8, Number 1 (Spring 2005): BEHG 425:
*Non-Coercive Classroom Management and Preventing School Violence.**
- Volume 8, Number 1 (Spring 2005): BEHG 475:
*Verbal Behavior II.**
- Volume 8, Number 2 (Fall 2005): BEHG 410:
Behaviorological Thanatology and Dignified Dying.
- Volume 9, Number 1 (Spring 2006): BEHG 365:
Advanced Behaviorology I.
- Volume 9, Number 2 (Fall 2006): BEHG 470:
Advanced Behaviorology II.
- Volume 10, Number 1 (Spring 2007): BEHG 120:
Non-Coercive Companion Animal Behavior Training.

Syllabi Planned for Future Issues

- Volume ?, Number ? (Spring/Fall 20??): BEHG 250:
Educational Behaviorology for Education Consumers.
- Volume ?, Number ? (Spring/Fall 20??): BEHG 340:
Educational Behaviorology for Education Providers.
- Volume ?, Number ? (Spring/Fall 20??): BEHG 405:
Introduction to Instructional Practices in Educational Behaviorology.

- Volume ?, Number ? (Spring/Fall 20??): BEHG 455:
Advanced Instructional Practices in Educational Behaviorology.
- Volume ?, Number ? (Spring/Fall 20??): BEHG 445:
Advanced Experimental Behaviorology.

Syllabi Locations Listed by Course Number

- BEHG 101: *Introduction to Behaviorology I:*
Volume 7, Number 2 (Fall 2004).
- BEHG 102: *Introduction to Behaviorology II:*
Volume 7, Number 2 (Fall 2004).
- BEHG 120: *Non-Coercive Companion Animal Behavior Training:*
Volume 10, Number 1 (Spring 2007).
- BEHG 201: *Non-Coercive Child Rearing Principles and Practices:*
Volume 7, Number 2 (Fall 2004).
- BEHG 250: *Educational Behaviorology for Education Consumers:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 340: *Educational Behaviorology for Education Providers:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 355: *Verbal Behavior I:*
Volume 7, Number 2 (Fall 2004).
- BEHG 365: *Advanced Behaviorology I:*
Volume 9, Number 1 (Spring 2006).
- BEHG 400: *Behaviorological Rehabilitation:*
Volume 8, Number 1 (Spring 2005).
- BEHG 405: *Introduction to Instructional Practices in Educational Behaviorology:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 410: *Behaviorological Thanatology and Dignified Dying:*
Volume 8, Number 2 (Fall 2005).
- BEHG 415: *Basic Autism Intervention Methods:*
Volume 8, Number 1 (Spring 2005).
- BEHG 420: *Performance Management and Preventing Workplace Violence:*
Volume 8, Number 1 (Spring 2005).
- BEHG 425: *Non-Coercive Classroom Management and Preventing School Violence:*
Volume 8, Number 1 (Spring 2005).
- BEHG 445: *Advanced Experimental Behaviorology:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 455: *Advanced Instructional Practices in Educational Behaviorology:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 470: *Advanced Behaviorology II:*
Volume 9, Number 2 (Fall 2006).
- BEHG 475: *Verbal Behavior II:*
Volume 8, Number 1 (Spring 2005). ☺

*An older version appeared in an earlier issue.

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TIBIA continuously considers additional membership benefits. Future iterations of this column will report all new benefits upon their approval.❧

TIBIA Membership Criteria & Costs

TIBIA has four categories of regular membership, of which two are non-voting and two are voting. The two non-voting categories are Student and Affiliate. The two voting categories are Associate and Advocate. All new members are admitted provisionally to TIBIA at the appropriate membership level. Advocate members consider each provisional member and then vote on whether to elect each provisional member to the full status of her or his membership level or to accept the provisional member at a different membership level.

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Admission to TIBIA in the Affiliate membership category shall remain open to all persons who wish to maintain contact with the organization, receive its publications, and go to its meetings, but who are not students and who may not have attained any graduate degree in behaviorology or in an acceptably appropriate area. On the basis of having earned TIBI Certificates, Affiliate members may nominate themselves, or may be invited by the TIBI Board of Directors or Faculty, to apply for an Associate membership.

Admission to TIBIA in the Associate membership category shall remain open to all persons who are not students, who document a behaviorological repertoire at or above the masters level or who have attained at least a masters level degree in behaviorology or in an acceptably appropriate area, and who maintain the good record—typical of “early-career” professionals—of professional accomplishments of a behaviorological nature that support the integrity of the organized, independent discipline of behaviorology including its organizational manifestations such as TIBI and TIBIA. On the basis either of documenting a behaviorological repertoire at the doctoral level or of completing a doctoral level degree in behaviorology or in an acceptably appropriate area, an Associate member may apply for membership as an Advocate.

Admission to TIBIA in the Advocate membership category shall remain open to all persons who are not stu-

dents, who document a behaviorological repertoire at the doctoral level or who have attained a doctoral level degree in behaviorology or in an acceptably appropriate area, who maintain a good record of professional accomplishments of a behaviorological nature, and who demonstrate a significant history—typical of experienced professionals—of work supporting the integrity of the organized, independent discipline of behaviorology including its organizational manifestations such as TIBI and TIBIA.

For all regular membership levels, prospective members need to complete the membership application form and pay the appropriate annual dues.

Establishing the annual dues structure for the different membership categories takes partially into account, by means of percentages of annual income, the differences in income levels and currency values among the world's various countries. Thus, the annual dues for each membership (or other) category are:

<u>Category</u>	<u>Dues (in US dollars)*</u>
Board of Directors member	The lesser of 0.6% of annual income, or \$120.00
Faculty member	The lesser of 0.5% of annual income, or \$100.00
Advocate member	The lesser of 0.4% of annual income, or \$80.00
Associate member	The lesser of 0.3% of annual income, or \$60.00
Affiliate member	The lesser of 0.2% of annual income, or \$40.00
Student member	The lesser of 0.1% of annual income, or \$20.00

*Minimums: \$20 director or faculty; \$10 others

TIBIA MEMBERSHIP APPLICATION FORM

(SEE THE NEXT PAGE FOR THE TIBI / TIBIA PURPOSES.)

Copy and complete this form (please type or print)—for membership or contributions or subscriptions or back issues—then send it with your check (made payable to TIBIA) to the TIBIA treasurer at this address:

Dr. Stephen Ledoux
TIBIA Treasurer
SUNY-CTC
34 Cornell Drive
Canton NY 13617 USA

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**For Student Membership:

I verify that the above person is enrolled as a student at: _____

Name & Signature of Advisor or Dept. Chair: _____

TIBI / TIBIA Purposes*

TIBI, 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 a professional organization also dedicated to expanding the behaviorological literature at least through the magazine/newsletter *Behaviorology Today* (originally called *TIBI News Time*) and the *Behaviorology and Radical Behaviorism* journal;** 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 their shared purposes. These activities include (a) encouraging and assisting members to host visiting scholars who are studying behaviorology; (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 separate, independent 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 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.☺

Periodical Information

Behaviorology Today [known as *TIBI News Time* for the first 4 volumes / 8 issues], is the magazine of *The International Behaviorology Institute* (a non-profit educational corporation) and is published in the spring and fall each year.

Behaviorology Today and TIBI can be contacted through the Editor at these addresses and web site:

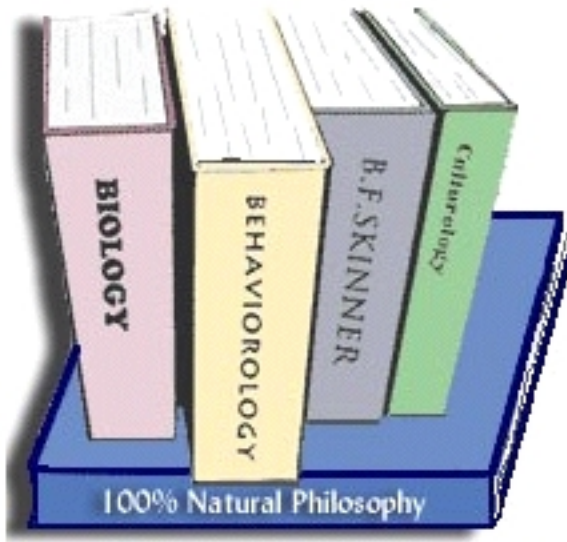
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To submit items for publication, contact the editor. Send items initially to the editor both by email (or disk) and by hard copy.

Authors' views need not coincide with official positions of TIBI. (Authors retain copyrights.)

*This statement of the TIBI / TIBIA purposes has been adapted from the TIBI by-laws.

**This journal (BARB) is under development at this time and will appear only when its implementation can be fully and properly supported.—Ed.



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