

QUARTER III, 2014

# OPERANTS

THE B. F. SKINNER FOUNDATION REPORT

## PROFILES:

Maria Helena Hunziker  
Emaley McCulloch  
Robert Mellon  
Paolo Moderato

## INTRODUCING *NEW VOICES*

WHERE HAVE THE  
BEHAVIORIST THERAPISTS  
GONE?

WHY THOUGHTS  
AREN'T CAUSES

OPERANT PRINCIPLES IN DRUG  
DISCOVERY

## HOW TO TRAIN AN ELEPHANT

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## Operants: What I See in This Issue

As the articles in this issue of *Operants* illustrate, the science that Skinner discovered increasingly melds into society. Shaping of behavior and positive reinforcement are acknowledged as more humane procedures for controlling behavior than the traditional aversive methods they replace. Unfortunately, not all practitioners attribute procedures to Skinnerian science even when it would account for their success. Nevertheless, Skinner's influence is revealed in 21st century language. Terms like "reinforcement", whether correctly used or not, have become part of the educational vernacular. Was "positive reinforcement" commonly used in writings about teaching before it appeared in Skinner's 1938 *Behavior of Organisms*? I don't think so. As one example, it is nowhere in 1933 edition of John Dewey's book, *How We Think*, although that book was written with the aim of improving educational practice.

Through *Operants*, the Foundation recognizes work that follows or extends the science B. F. Skinner began. Today, many of our readers work in situations where they are the lone behavioral professionals. Others have hectic schedules that restrict their professional reading to their particular specialty. *Operants* presents work and people not familiar to many of our readers. This issue also introduces "new voices" for contributions from those who have newly discovered *Operants* or the B. F. Skinner Foundation or who are sending comments for the first time. In this way the Foundation encourages a behavioral community, albeit with members flung across the globe. Among our members are volunteers to whom we owe many thanks for the contents of *Operants*. The Foundation is always open to ideas. You can contact us through [info@bfskinner.org](mailto:info@bfskinner.org) or by emailing me at [julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org).

**Julie S. Vargas, Ph.D.**

President, B. F. Skinner Foundation

### Chinese Simplified Translated by Coco Liu

当这一期的Operants的文章准备注明，斯金纳发现的科学越来越多融入社会。朔形和正强化被公认为相比他们所取代的传统的方法更人性化，并用于控代不适当的行为。不幸的是，并非所有人员使用斯金纳的科学的人员都归属这正确的方法，即使这是他们成功的原因。尽管如此，斯金纳的影响揭示了21世纪的语言的言语。像“强化物”，无论是使用正确与否，已成为教育的一部分。“正强化”一词在斯金纳1938年的“生物的行为”之前就常常出现在书面教学的文献中吗？我不这么认为。作为一个例子，它是并没有出现在杜威的书“我们是怎么想的”，尽管这本书是写在1933年为改善教育实践的目的。

通过Operants，基金会认识到跟随和扩展斯金纳科学的工作开始。今天，我们的许多读者的工作，他们是孤独的行为专业人员。其他专业由于他们繁忙的日程只阅读到他们的特顶定领域。Operants介绍的工作对我们的许多读者并不熟悉。本期介绍的“新声音”的是特别有助于那些新发现Operants或斯金纳基金会或第一次发表评论的读者。通过这种方式，基金会鼓励研究行为的团体，尽管所有成员在全球范围。在我们的成员都是志愿者，我们Operants感谢所有的成员。该基金会是永远开新的想法。您可以通过[info@bfskinner.org](mailto:info@bfskinner.org)或[julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org)发送电子邮件与我们联系。

### Chinese Traditional Translated by Coco Liu

當這一期的Operants的文章準備註明，斯金納發現的科學越來越多融入社會。朔形和正強化被公認為相比他們所取代的傳統的方法更人性化，並用於控代不適當的行為。不幸的是，並非所有人員使用斯金納的科學的人員都歸屬這正確的方法，即使這是他們成功的原因。儘管如此，斯金納的影響揭示了21世紀的語言。像“強化物”，無論是使用正確與否，已成為教育的一部分。“正強化”一詞在斯金納1938年的“生物的行為”之前就常常出現在書面教學的文獻中嗎？我不這麼認為。作為一個例子，它是並沒有出現在杜威的書“我們是怎麼想的”，儘管這本書是寫在1933年為改善教育實踐的目的。

通過Operants，基金會認識到跟隨和擴展斯金納科學的工作開始。今天，我們的許多讀者的工作，他們是孤獨的行為專業人員。其他專業由於他們繁忙的日程只閱讀到他們的特頂定領域。Operants介紹的工作對我們的許多讀者並不熟悉。本期介紹的“新聲音”的是特別有助於那些新發現Operants或斯金納基金會或第一次發表評論的讀者。通過這種方式，基金會鼓勵研究行為的團體，儘管所有成員在全球範圍。在我們的成員都是志願者，我們Operants感謝所有的成員。該基金會是永遠開新的想法。您可以通過[info@bfskinner.org](mailto:info@bfskinner.org)或[julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org)發送電子郵件與我們聯繫。

### Japanese Translated by Hirofume Shimizu

本号の「Operants」では、スキナーが発見した科学が、社会に広く浸透していることを紹介します。行動を制御するためのシャイピングや正の強化は、人道的な方法として受け入れられ、古くから使われていた嫌悪の方法の代わりとなりました。残念なことに、スキナーの科学により成功している実践家の中には、その事実を認めない人がいます。でも、スキナーの科学が21世紀に影響していることは間違いありません。適切に使われているかどうかわかりませんが、たとえば、「強化」という用語は、教育の場面で頻繁に使われます。スキナーの著書である、「The Behavior of Organisms」が、1938年に出版されました。この本が出版されるまで、「正の強化」という用語は殆ど使われていませんでした。1933年に、ジョン・デュエーイの著書である、「How We Think」の改訂版が出版されたとき、実践教育に関する本でしたが、「正の強化」という用語はどこにも使われていませんでした。

B.F.スキナー財団は、スキナーの科学を継続・拡張した仕事を「Operants」に掲載しています。多くの読者は、自身が唯一の行動専門家である環境で働いています。また、ある読者は、忙しすぎて自分の専門分野以外の情報を収集する時間がありません。そこで、「Operants」では、あまり知られていない仕事を紹介しています。本号では、「新たな声（“new voices”）」を紹介します。「Operants」の新規読者や、初めてコメントを送る読者、B.F.スキナー財団が寄稿しています。この方法で、世界中に広がる行動専門家のコミュニティを支援したいと思います。「Operants」は、ボランティアによる投稿で成り立っており、財団は、新しいアイデアを常に受け入れています。ご意見・ご感想がありましたら、以下のアドレスへお問い合わせ下さい。

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### Italian Translated by Anna Luzi

Come gli articoli in questo numero di *Operants* dimostrano, la scienza che Skinner ha scoperto sta entrando sempre più nella società. *Shaping* e rinforzo positivo sono riconosciute come procedure per il controllo del comportamento molto più affini alle umane aspettative rispetto ai metodi più tradizionali che vanno a sostituire, fondati su meccanismi punitivi e stimoli aversivi.

Purtroppo non tutti coloro che praticano metodologie comportamentiste attribuiscono l'origine dei metodi che utilizzano alle scoperte scientifiche di Skinner, anche quando queste spiegano ampiamente il loro successo. L'influenza di Skinner è comunque evidente nelle scelte linguistiche del 21° secolo. Termini come “rinforzo”, siano essi correttamente utilizzati o meno, sono diventati parte del gergo utilizzato in campo educativo. Possiamo dire che il termine “rinforzo positivo” fosse comunemente usato negli scritti sull'insegnamento prima che apparisse nell'opera di Skinner del 1938 “*Behavior of Organisms*”? A mio avviso decisamente no. Come esempio vi è il fatto che non si trova da nessuna parte nell'edizione del 1933 del libro di John Dewey “*How We Think*”, anche se quel libro fu scritto con l'intento di migliorare la pratica educativa.

Attraverso *Operants*, la Fondazione riconosce il lavoro di coloro che seguono o sviluppano la scienza comportamentista, che ha avuto origine da BF Skinner. Oggi, molti dei nostri lettori lavorano in situazioni di isolamento professionale, essendo in pochi a seguire metodologie comportamentiste. Altri hanno orari frenetici che limitano il loro aggiornamento professionale unicamente a ciò che concerne la loro particolare specializzazione. *Operants* offre l'opportunità di raccontare esperienze, lavori di ricerca e applicazioni con cui molti dei nostri lettori possono non avere consuetudine. Attraverso “voci nuove”, diamo quindi spazio ai contributi di coloro che hanno scoperto da poco *Operants* o la Fondazione B. F Skinner, o che inviano i loro commenti per la prima volta. In questo modo la Fondazione intende incoraggiare una comunità di comportamentisti, seppur con membri diffusi in tutto il mondo. Tra i nostri membri ci sono volontari, ai quali siamo riconoscenti per il contributo e i contenuti che propongono in *Operants*. La Fondazione è sempre aperta alle idee. Potete contattarci attraverso [info@bfskinner.org](mailto:info@bfskinner.org) o scrivere direttamente a me all'indirizzo [julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org).

### Norwegian Translated by Monica Vandbakk

Som artiklene i denne utgaven av *Operants* illustrerer, blir Skinners vitenskap stadig en større del av samfunnet. Tradisjonelle aversive metoder for å kontrollere atferd er erstattet med mer humane prosedyrer som shaping og positiv forsterkning. Dessverre oppgir ikke alle vitenskapsmenn at deres prosedyrer har opprinnelse i Skinners vitenskap. Likevel er Skinners innflytelse på for eksempel språk tydelig i det 21. århundre. Uttrykk som "forsterkning", om enn ikke helt riktig brukt, har blitt en del av det pedagogiske språket. Var "positiv forsterkning" vanligvis brukt i tekster om undervisning før det dukket opp i Skinners 1938 *Behavior of Organisms*? Jeg tror ikke det. Begrepet brukes for eksempel ikke i John Deweys bok *How We Think*, skjønt boken ble skrevet i 1933 med sikte på å forbedre datidens pedagogiske praksis.

Gjennom *Operants* erkjenner Stiftelsen B. F. Skinner arbeidet som følger eller utvider vitenskapen B. F. Skinner startet. I dag jobber mange av våre lesere i miljøer hvor de er alene som atferdsanalytikere. Andre har hektiske timeplaner som begrenser deres profesjonelle lesing mot en spesialitet. *Operants* introduserer arbeid som mange av våre lesere ikke er kjent med. Denne utgaven introduserer «nye stemmer», gjennom bidrag eller kommentarer fra personer som nettopp har oppdaget *Operants* eller Stiftelsen B.F. Skinner. På denne måten oppmuntrer Stiftelsen til et eget atferdsmiljø, selv om medlemmene er spredt over hele kloden. Blant våre medlemmer, er det mange som arbeider som frivillige for Stiftelsen og *Operants*, og for dette skylder vi dem en stor takk. Stiftelsen er alltid åpen for ideer. Du kan kontakte oss via [info@bfskinner.org](mailto:info@bfskinner.org) eller ved å sende meg en epost på [julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org).

### Portuguese Translated by Monalisa Leao

Tal como os artigos dessa edição do *Operants* ilustram, a ciência que Skinner propôs se funde cada vez mais na sociedade. Modelagem e reforçamento positivo são conhecidos como procedimentos mais humanos para o controle do comportamento do que os métodos aversivos tradicionais. Infelizmente, nem todos os profissionais atribuem esses procedimentos à ciência Skinneriana, mesmo quando ela deveria explicar pelo sucesso deles. No entanto, a influência de Skinner é revelada na linguagem do século XXI. Termos como "reforçamento", se corretamente utilizado ou não, tem se tornado parte do vernáculo educacional. O termo "reforçamento positivo" já era frequentemente usado nos escritos sobre ensino antes de ter aparecido na obra skinneriana *Comportamento dos Organismos* de 1938? Eu acho que não. Como um exemplo, esse termo não está na edição de 1933 do livro de John Dewey, *Como Pensamos*, apesar desse livro ter sido escrito com o objetivo de melhorar a prática educacional.

Por meio do *Operants*, a Fundação reconhece o trabalho que segue ou estende a ciência que B. F. Skinner começou. Hoje, muitos de nossos leitores trabalham em situações onde eles são profissionais comportamentais solitários. Outros têm agendas lotadas que restringem suas leituras profissionais à suas especialidades particulares. *Operants* introduz o trabalho com o qual muitos de nossos leitores não estão familiarizados. Esta edição introduz "novas vozes" para contribuições de quem tem recém descoberto o *Operants* ou a Fundação B. F. Skinner ou de quem está enviando comentários pela primeira vez. Dessa maneira, a Fundação incentiva uma comunidade comportamental, embora com membros espalhados em todo o globo. Entre os nossos membros estão voluntários a quem nós devemos muitos agradecimentos pelo conteúdo do *Operants*. A Fundação está sempre aberta a idéias. Você pode entrar em contato conosco pelos e-mails [info@bfskinner.org](mailto:info@bfskinner.org) ou [julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org).

### Russian Translated by Konstantin Evdokimov

Как видно из статей в этом номере *Operants*, наука, открытая Скиннером, все глубже проникает в жизнь общества. Концепции *формирования поведения и положительного подкрепления* признаны более гуманными методиками контроля поведения, чем традиционные авersive методы, которым они приходят на смену. К сожалению, не все практикующие специалисты отождествляют свои методы с учением Скиннера, даже когда это могло бы объяснить их успех. Как бы там ни было, влияние Скиннера раскрывается в языке XXI века. Такие термины, как "подкрепление", правильно ли они используются или нет, стали частью педагогической лексики. Использовался ли термин "положительное подкрепление", ставший обычной частью образовательной литературы, прежде чем он появился в книге Скиннера «Поведение организмов» (1938)? Я так не думаю. Например, этот термин нигде не встречается в издании 1933 года книги Джона Дьюи «Как мы думаем», хотя та была написана с целью улучшения педагогической практики.

Через *Operants* Фонд отдает должное той работе, которая следует науке, начатой Б. Ф. Скиннером, и развивает ее. Сегодня многие из наших читателей работают в ситуациях, когда они являются единственными профессиональными поведенческими специалистами. Другие, в силу напряженного графика, ограничивают свое профессиональное чтение узко специальной литературой. *Operants* рассказывает о людях, практическом опыте и научной работе, с которыми многие из наших читателей незнакомы. В этом номере мы также открываем рубрику «Новые голоса», где даем слово тем, кто вновь открыл для себя *Operants* или Фонд, и для тех, кто отправляет нам статьи впервые. Таким образом Фонд пытается создать сообщество бихевиористов, хоть члены этого сообщества и разбросаны по всему миру. И отдельная благодарность нашим волонтерам, которым мы во многом обязаны за содержание *Operants*. Фонд всегда открыт для новых идей. Вы можете связаться с нами через [info@bfskinner.org](mailto:info@bfskinner.org) или написать мне лично на адрес [julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org).

### Spanish Translated by Cristina Franco

Como los artículos de este número de *Operants* ilustran, la ciencia que Skinner descubrió funde cada vez más a la sociedad. Moldeamiento y reforzamiento positivo, por lo cual han reemplazado los métodos tradicionales aversivos, son reconocidos como procedimientos más humanos para controlar el comportamiento. Desafortunadamente, no todos los profesionales atribuyen procedimientos a la ciencia Skinneriana incluso cuando explicaría su éxito. Sin embargo, la influencia de Skinner es revelado en el lenguaje del siglo 21. Términos como "reforzamiento", aunque no se utilice correctamente, se han convertido en parte del lenguaje educativo. ¿Fue "reforzamiento positivo" comúnmente usado en los escritos acerca de la enseñanza antes de que apareciera en 1938 dentro de la escritura de Skinner, *Behavior of Organisms* (*Comportamiento de Organismos*)? Yo no lo creo. Como un ejemplo, no está en parte en la edición 1933 del libro de John Dewey, *How We Think* (*Cómo Pensamos*), a pesar de que el libro fue escrito con el objetivo de mejorar la práctica educativa.

A través de *Operants*, la Fundación reconoce el trabajo que sigue o que extiende la ciencia que comenzó B.F. Skinner. Hoy en día, muchos de nuestros lectores trabajan en situaciones en que son los profesionales de conducta solitarios. Otros tienen horarios agitados que restringen su lectura profesional en su especialidad particular. *Operants* introduce el trabajo con el que muchos de nuestros lectores no están familiarizados. Esta edición presenta "nuevas voces" de contribuciones de aquellos que han descubierto recientemente *Operants* o la Fundación B. F. Skinner o que están enviando sus comentarios, por primera vez. De esta manera, la Fundación fomenta una comunidad conductual, aunque los miembros están arrojados por todo el mundo. Entre nuestros miembros están voluntarios en los que les debemos muchas gracias por el contenido de *Operants*. La Fundación está siempre abierta a sus ideas. Puede contactarnos a través [info@bfskinner.org](mailto:info@bfskinner.org) o enviando un correo electrónico a [julie.vargas@bfskinner.org](mailto:julie.vargas@bfskinner.org).

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# Where Have the Behaviorist Therapists Gone?

by Paolo Taras, Ph.D.  
Genova, Italy



Dr. Paolo Taras has been working in the HR consultancy field designing people management systems, delivering courses, and assessing people potential for career orientation. He earned his Doctorate degree in Psychology at the University of Padoa in 1982 with a thesis about the epistemology of social sciences. When, unsatisfied with the few Italian translations of Skinner's books he went in search of the original English texts, he came across the Foundation and since then he developed a deep and long lasting friendship with Julie and Ernest Vargas. A definite Skinner addict who finds continuous inspiration in studying Skinner's works, he is planning to organize and select his heaps of notes to make them become a reading guide and commentary on the man he reckons to be the reborn Galileo of contemporary science.

Where have all the flowers gone? ... Young girls picked them everyone. So went a pacifist song of the early 60s, nostalgic and reproachful. Where have all the behaviorist therapists gone? So goes my Skinnerian question, nostalgic and perplexed.

The drift began some 30 years ago. It was then that the first timid initiatives towards an incorporation of the cognitive conquests within the behaviorist frame saw the light. I did not take much notice then, I confess. Partly because I work as a consultant in the HR (Human Resources) field; I am not a therapist. Partly because I attributed these changes to a token expedient to be more intelligible to their clients; a problem I always had myself, bound as I am to the vernacular with my customers. Years have gone and now the phenomenon has spread exponentially: cognitive behavioral therapists everywhere. The once behaviorist faculties, institutions, associations, post graduate schools have almost all turned cognitive behavioral (*cognitivo comportamentale*, Italian). The newborn ones also echo the fashionable title: cognitive-behavioral. Amongst new and old are prestigious names, evocative of their theoretical origins, such as Watson, Miller, Skinner. For example, the *Skinner Institute*, is an old one that Skinner visited, in the 80s, and to whom he gave permission to use his name. You bet, now it is cognitive-behavioral too.

That Cognitivism is winning and triumphant, we are informed. But cognitive-behavioral? I can't make head or tail of this beast. Or can I? A cognitive head and a behavioral tail, why not? A head for perceptions, codes, intentions, motivations, feelings, cognitions, in a word, brain stuff; reflexes, responses, stimuli, glands, gastric reactions, for the tail, all savored in behavior sauce for the skeletal muscles. Not bad, a perfect result of eclectic form. If you've got doubts about electing this animal as your pet don't worry, no fears of Aristotelian reminiscences: behaviorism is scientific, cognitivism is scientific, so the result is double science, what else?

What happened? Was it the inexorable force of Chomskian arguments, or is it just running away from *A Clockwork Orange*? What is so convincing in Bandura's model that I discarded with a shrug? Am I driving home "because" I expect to get there? Am I writing this essay "because" I expect it to be read?

Here, in my hands, I am holding a book that's been written with the contribution of the cream of the Italian behavior science community—twenty-one authors (academics and practitioners). It is the holy writ for all students and used in most university courses. Its title? *Mind and Behavior (Mente e Comportamento)*. In the Introduction we get

to know that one experiment in particular has shaken the once integral behaviorists' confidence: the experiment by Martin Seligman, the one about the dog who didn't—apparently inexplicably—escape from the shock delivered even though he could have done so. What had happened to the poor animal? We are told he had developed the cognition, a wrong one, of not having any alternative but to sit there and moan—"learned helplessness". Well, apparently shocking the dog into immobility brings an understanding of its emotional cognitive state. But such a cognitive speculation does not bear on Skinnerian science. The contingent properties of shock within a given schedule produce non-intuitive outcomes for specified properties of actions. It is the properties of defined classes of action that are studied in Skinner's science, not inferences about a governing agent in a dog or any other animal. Contingency schedules produce all sorts of curious outcomes that find their analogues in everyday life such as masochism or anorexia or helplessness. A schedule can result in actions that produce fewer calories than those expended for food, that is, "learned skinniness".

The result of all this cognitive volition seems to be the re-return and re-proposal of the Initiating Agent. All the traditional psychological paraphernalia—affections, imagination, memory, perceptions, purpose, motivation, emotions—are back on board. What's curious is that such stuff is noisily and proudly displayed as if it had been previously neglected by Skinner and company. But that stuff is what Skinnerian Theory is all about! A long discourse about the "mind", looking at behavior, just like Galileo's was a long discourse about the earth, looking at the sun.

At an international congress held years ago by the *Italian Association for Behavior Analysis and Modification* there were plenty of relevant personalities of this brave new hybrid science: academics, European and American representatives, therapists, students. As works and presentations went on I realized I was surrounded by cognitive behaviorists. Cognitions all over; I sat quietly by myself (a feeling of 'helplessness', for sure) until finally I took some courage and enquired: "Plenty of talk about cognitions and mental states. Do patients want it this way or is there anything wrong with behavior therapy?"

"You see", said the cheerful woman, "it's not us, but they come along with such wrong cognitions! We could

not help. And they speak, *mamma mia*, how much they speak, and the mess with meanings and interpretations, you can't believe it."

"I get it, fair enough; cognition and behavior, one bird with two stones, so to speak."

"That's correct! You see, you cognize then you speak. It's our brain that does the job, lots of decoding, opening, closing, barring, sorting, mapping, choosing. We now know a lot more about how it works."

"And tell me, why not go cognitive altogether?"

"You're kidding! People have to consolidate their cognitions behaviorally, have to practice their changes."

"Oh " I say unable to hide my shame, "how could I miss that?"

I drove back home rather nervously, processing the road's cues with my brain, performing movements with hands and feet, and checking on my mental maps.

Cognitive therapists, and cognitivists in general, are not naïve folks, and don't want to risk being put back into an "Introspection" paradigm the Wundtian way, nor back into a metaphysical realm made of impalpable mental ideas. Instead, cognitions are concrete, tangible things, images, smells, feelings, which are processed by our brain through a sort of chain line, made up of neurons, oiled by chemical-electric stuff with the role of "mediators". No mind, no man (or woman for that matter), just brain. It seems that in this view cognitions are manageable objects with an ontological respectability, which can be forged more or less well by a processing machinery. One day we'll go to the supermarket of ideation (storing and retrieving is the cognitivists' cherished sport) and get our new cognitions according to need: love for snakes; courage for cowardliness; availability for affections; hopefulness for helplessness. Today this merchandize is handmade by the therapists but, you'll see guys, one day they'll be right on the shelves, manufactured by some psycho-neuro-bio enterprise. 'Can I help you sir?' 'Yes, please, I'd like some money-detachment-feelings, I wanna stop being a miser'. Skinner predicted this evolution: "Physiology has a special appeal to those who explain behavior in mentalistic terms because it seems to show what is really going on inside, what one is really talking about. Cognitive psychologists have turned to brain science for that reason." (*Recent Issues in the Analysis of Behavior*, p.82, 1989).

A claim in defense of the eclectic beast is that to some degree it is effective. A legitimate suspicion, however, is that a supportive relationship carried out by a respectful professional with experience and sensitivity may be efficacious anyway. And once you open the door to “what works”, there’s no limit to the packaging. In fact in a vortex of eclectic refinements, we go from Cognitive Behavior Therapy to Acceptance and Commitment Treatment, Di-

alectical Behavior Therapy, Scheme Therapy, Relational Frame Therapy, to mention a few. In passing, I heard Shiatsu is quite a relieving practice, not to say anything of Meditation and Yoga, as well as Zen Archery and horse riding.

*Where have all the behaviorist therapists gone? Young minds picked them everyone. ■*

brevis

**B. F. Skinner Foundation 2014 CalABA Student Research Award  
Winner: Candice Hansard (California State University, Northridge)**



find that a self-instructional package was sufficient for

The number of children in need of behavior analytic services far exceeds the number of behavior analysts who can train and supervise staff to implement assessments and behavior change plans with fidelity. As such, it is of paramount importance to find ways to maximize a supervisor’s time. Graff and Karsten (2012) were the first to

novel staff to conduct correctly a multiple-stimulus without replacement (MSWO) and paired-stimulus (PS) preference assessment. Shapiro et al. (in preparation) replicated this study and found that 28% of participants still required feedback and in vivo modeling. To maximize supervisor time, I propose to use a video that includes instruction and modeling to teach undergraduates how to conduct a preference assessment. I will train five undergraduate students to reach the mastery criteria of 90% or above across two consecutive trials. All participants will view a video that includes instruction and modeling and will be asked to conduct a PS preference assessment with a simulated client. ■

**B. F. Skinner Foundation 2014 FABA Student Research Award  
Winner: Catalina Rey (Florida Institute of Technology)**



Second order schedules of token reinforcement under fixed-ratio and variable-ratio exchange schedules have been investigated with nonhuman organisms (Webbe & Malagodi, 1978; Foster, Hackenberg, & Vaidya, 2001). But despite the widespread use of token systems with children

with disabilities, research evaluating the effects that token exchange schedules have on human performance has yet to be published. The purpose of this study is to extend the basic literature on token economies by comparing the performance of four children with autism under fixed-ratio and variable-ratio token exchange schedules using a multi-element design within a parametric analysis. ■



# Emaley McCulloch

## Co-Founder and Managing Partner Autism Training Solutions Honolulu, Hawai

interview by Steven Rodriguez

### *What attracted you into the field of Behavior Analysis?*

I wasn't attracted to field of Applied Behavior Analysis (ABA) directly. I fell into the field of ABA because I love working with people with autism. This population is fascinating to me. I remember at the age of sixteen, reading every book on autism I could get my hands on. There was so much conflicting information at the time and it motivated me to figure out what worked with these children.

They just seemed to have so much unlocked potential. I started volunteering at a local parent organization in California. Each child I encountered was like a puzzle to solve and I loved interacting with them and discovering what made them tick. In 1997, I started working for in-home programs funded by families in California and was trained by some of the folks at the Lovaas Institute and Autism Partnership. I also started working part time in a local TEACCH classroom with one of my clients and also with a Floor Time consultant. I was able to apply and compare these three strategies with my clients. I was able to see that the child with the comprehensive ABA program flourished while my other clients struggled. Over time, I was able to convert the other families to utilize ABA (although I did not know that it was called ABA). I hung on every word from the consultants sent to the families I worked for. In 2001 I attended a training provided by the Center for Autism and Related Disorders (CARD) about the foundations of ABA where I finally learned about Thorndike, Watson, and B.F. Skinner as well as more recent research on ABA and I was hooked! I wanted to become a Board Certi-

fied Behavior Analyst so naturally I moved to the hardest place to get education and supervision to become a BCBA, Hawaii.

*Please describe your current research and recent behavioral interests.*

I am the co-founder of [Autism Training Solutions LLC](#) which is a company that provides online video-based training in ABA for over 400 organizations and schools. I

believe that ABA treatment for people with autism should be accessible and that Behavior Analysts can only reach so many individuals. Technology can be leveraged to help the field grow and reach families and children that have few resources. I work with many University programs to use the ATS videos within ABA/SPED courses to help demonstrate and present stories of what ABA can do in the lives of people affected by autism and related disabilities. ATS just recently joined a company called Relias Learning which is the leading company in the health and human services field for online training. They also serve the fields of Mental Health, Intellectual and Developmental Disabilities, Child and Adult Services and Senior Care. I am excited to expand the ATS videos and offerings with the help

of Relias Learning and disseminate ABA services within these other important service fields.

*What are some challenges the field of Behavior Analysis might still face to progress from the misconceptions from the past?*

I have directly experienced the barriers that have



been built between the field of ABA and other education and human services fields through my clinical work on a small scale and through my work with ATS on a large scale. I have seen whole school systems and mental health organizations not train their team in ABA simply because they have misconceptions of what ABA is. It is sad that ABA has to disguise itself under names such as Positive Behavior Supports, Evidence-Based Interventions, and Behavioral Interventions etc. in order to get adopted into programs that provide thousands of individuals with services.

Here are some strategies I use when presenting ABA to people, teams or organizations that do not fully understand and/or support ABA.

**Build trust and respect with the people before pushing the ideals of ABA on them.** If they trust you as a competent and intelligent professional that works well with others, they will be more open to listening and taking your recommendations.

**Recognize the unique contributions of other professionals on the team.** Although other members on multi-disciplinary team may not hold the same values as ABA professionals, they bring other perspectives to the table. For example, a speech therapist will know when it's appropriate to work on certain sounds. A clinical psychologist may have cognitive behavioral strategies that are based on research to be effective for certain behaviors related to attachment issues or Post-Traumatic Stress Disorder (PTSD), etc.

**Present ideas and data in layman's terms AND scientific terms together.** Pair the use of ABA terms such as mand or tact with everyday terms such as requests or descriptive labels. This will help the team relate to what you are saying and feel more comfortable talking to you.

**Provide reinforcement for team progress.** When a team member uses an ABA term, starts taking or

using objective data, uses an ABA strategy effectively, point it out and offer praise. There might be mistakes and misinterpretations but use your training in shaping to build new team behaviors over time.

Here is a good article that I use to remind myself of this important issue:

<http://www.autismtrainingsolutions.com/resources/research/we-have-problem-field-applied-behavior-analysis>

*Through your experience in the field, what recommendations do you provide the new behavior analysts joining the field?*

**Be grateful** every day for what you get to do. **Be humble.** When you work on a team with differing views, listen to others input, and resolve issues with humility. Just as you need to win over your clients in order to teach them, you need to earn the trust of the team in order make an impact on the way the team provides services. **Be smart** and rely on the science and data. If you don't know an answer, do your research and learn from others. **Be optimistic** and challenge yourself and your clients. **Be involved** by always learning and stretching yourself. **Be truthful** in your dealings with others. Keep a copy of the guidelines for responsible conduct and review it often.

*What do you believe is a major contribution of Skinner to the field?*

B.F. Skinner's work built upon other behaviorists but focused on experimentation rather than theory. He tested out his principles instead of just presenting them and took data on how his principles could be applied to organisms. These experiments became a catalyst for years of research on the principles of behavior such as positive reinforcement and shaping to solve socially significant problems with humans such as addiction, developmental disabilities, autism, organizational management, animal training and education. ■

# Why Thoughts Aren't Causes

by Lee Hulbert-Williams, Ph.D.  
University of Chester, United Kingdom

reflections

I was asked this week by a couple of my students why I prefer the behaviour analytic ways of thinking, compared, say, with the standard information processing approaches of cognitive psychology. I'm not a diehard behaviourist, but I do lean quite a bit toward functional contextual ways of thinking, and I'll be honest and say B.F. Skinner is my all-time intellectual hero. (I've also been involved in qualitative research and I teach psychometric scale development, so please don't write me off as "one of them".)

There is a lot of rubbish spouted about behaviourism, often by [people who should know better](#). Claims that behaviourists deny the existence of internal psychological events like thoughts and emotions might not be ridiculous if you're thinking about the behaviourism of John B. Watson, but virtually no behaviour analysts today are thinking about him. Watson's behaviourism is often called methodological behaviourism and it stands in stark contrast to Skinner's more recent radical behaviourism. Skinner explicitly was interested in thinking and feeling. Indeed, he wrote an entire book about it.

Claims that behaviour analysts routinely punish their clients into compliance are simply bull\$%t. (I'm using the word here in the sense of [Harry G. Frankfurt's classic text](#) where he defines bull\$%t as making knowledge claims when you have insufficient familiarity with the knowledge domain. Apologies for the strong language, but the extent of some psychologists' ignorance about behaviourism is truly breathtaking.)

So what are the main features of modern behaviourism, and why do I think it's a useful way to conduct science? (I'm going to say 'modern behaviourism' to lump together radical behaviourism and closely related philosophical frameworks like functional contextualism.) There are lots of important features. Functional contextualists make the assumption, for instance, that it's important to very clearly define the scope of the behaviour you're analysing; since the world doesn't come already pre-quantified it's important that we state plainly how we, as scientists are choosing to chop it up.

For me, though, the two most important features of modern behaviourism are these:

1. Mental events are not considered causes of behaviour. They are simply types of behaviour themselves and are themselves to be explained.

2. Behaviourists look to be able to predict and influence behaviour. Prediction alone is not enough.

This is the very nub of the difference between much of applied cognitive psychology on the one hand and modern behaviourism on the other. Though I wouldn't want to over-play it, this difference often leads to quite different interpretations of the same phenomena, and in my view, the behaviourist account is usually more hopeful.

Take the classic marshmallow experiments. You've probably heard of them. In a series of experiments in the late 1960's and early 1970's at Stanford, [Mischel, Ebbesen](#) and colleagues sat children in front of a marshmallow and told them that if they didn't eat it right away, they'd get more marshmallows later. This is a classic delayed gratification paradigm. If the child can resist, she's rewarded with even more sweets. Some kids wait. Some gobble the sweets. Over the years, Walter Mischel and colleagues built an impressive body of work examining individual differences in this ability to delay gratification. For example, in 1988 they published a longitudinal paper showing that



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*He earned his BSc in psychology from The University of Manchester in 2002, and his MSc in conducting research in clinical and health psychology from The University of Wales in 2004. His Ph.D., which examined the response to stressful life events in people diagnosed with an intellectual disability, was awarded by the University of Bangor in 2009.*

*Though he has taught psychometric testing for some years, and has been instrumental in the development of a number of psychometric measures, Lee's research has recently turned toward the experimental. He leads the Healthy Habits Research Laboratory at the University of Chester, where current and recent work includes analyses of the relative power of techniques taken from the ACT tradition in helping people to engage with physical exercise programmes, deal with food cravings, and make other similar healthy choices.*

*Lee writes for academic and lay audiences alike on his blog at [www.leehw.com](http://www.leehw.com), where this article first appeared.*

“children who were able to wait longer at age 4 or 5 became adolescents whose parents rated them as more academically and socially competent, verbally fluent, rational, attentive, planful, and able to deal well with frustration and stress.” Impressive stuff.

What are we to conclude from such research? Well, the phrase ‘individual differences’ appears many times in these papers. Though the researchers occasionally look at contextual factors, such as whether the children were encouraged to think about the flavour or the shape of the treat, mostly they are clearly describing this phenomenon as a function of some internal ability the child has. And that’s precisely how the media interpret such findings too.

[Time Magazine](#), for instance, uses phrases like, “show an underlying inability to exert self-control in adulthood.” What does it suggest to us, as applied psychologists and educators? At best, that we should encourage people to pull themselves up by their bootstraps and develop ‘self control’. At worst, that some people just don’t have what it takes. Elsewhere in the popular media the findings are interpreted as suggesting that we can develop better willpower techniques if we try really hard to work on our own minds.

Fast forward half a century. Celeste Kidd and colleagues at the University of Rochester repeated the [experiment](#) with a contextual manipulation. For some of the kids, the marshmallow experiment was preceded by the experimenter offering some crappy crayons for an art project, saying she’d go and get better ones, then returning empty handed. For some kids, the experimenter followed through. Then, just to drive the message home, in the first ‘adults are unreliable’ condition, the experimenter offered a sticker and said she’d come back with more, better stickers soon. Then didn’t. In the ‘adults follow through’ condition she came back with some awesome stickers.

At this point, your common sense is telling you what happened when the kids were then asked to wait, staring at a marshmallow, whilst the experimenter went to get more. You might imagine yourself in the situation. You might imagine yourself thinking, “she lied before, so she’s lying now”. Regardless of what you imagine happening in the child’s head, the focus of this experiment on the context of the behaviour leads us naturally to different ideas about its implications. We’re no longer thinking that the marshmallow-munching kids show an “underlying inability”. Instead, we realise that kids raised in an unreliable family environment would learn a generalised set of behaviours to take what’s available now, and discount promises of future reward.

With this later set of results, we’re imagining all sorts of family-based interventions to help children become more “academically and socially competent”.

Dr. Kidd describes herself as a cognitive scientist, so why am I using the excellent work she and her colleagues did as an example of how behaviourism is the best thing since the web? It’s simple. Cognitive psychology took half a century to come up with some robust findings that environmental context plays a powerful role in guiding these sorts of ‘willpower’ behaviours. Dozens of papers and thousands of person-hours have gone into exploring whether this or that personality characteristic is associated with waiting for the second marshmallow. I humbly suggest that modern behaviourism would have got us there faster.



Remember what I said earlier about causality? Behaviourists do not accept mental events as causes of other behaviours. Explanations invoking children’s willpower or other ‘individual differences’ would be complete non-starters for most behaviourists. Any behaviour analyst coming across this phenomenon would immediately have started looking for contextual events, outside of the child’s own skin, that

seem to influence the behaviour. These events might have been patterns of reinforcement within the family context. Early on, had Mischel taken a behavioural stance, he would have asked what experimental manipulations to the procedure and to the environment in which the children found themselves would encourage them to wait for the second marshmallow.

B. F. Skinner wrote an almost utopian novel, *Walden Two*, published in 1948, to show how the application of radical behaviourism could lead to an improved, more harmonious society. The book has been roundly criticised, but I’d like to suggest that Skinner was right in at least one regard. If we look to internal mental phenomena like ‘willpower’ to explain our behaviour we risk developing a very pessimistic outlook on the world where people have simply to put up with their lot in life. If we focus on how external circumstance influences behaviour we immediately start to build ideas of how to support people to develop more useful behavioural repertoires.

Despite the bad rap, modern behaviourism is inherently the most hopeful school of psychology. Perhaps I’m a hopeful psychologist, but it’s this, more than anything else, that draws me to modern behaviourism. ■

# Paolo Moderato, Ph.D.

President, IESCUM  
Milano, Italy

profiles

interview by Anna Luzi

*Professor, you are President of European Institute for the Study of Human Behavior (IESCUM), a scientific association founded in 2003 whose mission was also to coordinate research that has developed around behavioristic international thought, but still not achieved within the Italian context. Please, could you tell us when your interest in behavioral analysis was born?*

I started in 1972-73 during University, when I met by chance—you know how word of mouth is among students—the man who would become my mentor, Professor Ettore Caracciolo. Caracciolo organized a conference at the European Centre of Education of “Villa Falconieri” in Frascati (Rome), entitled “Recent Developments in the Psychology of Learning”. It put us in contact with some researchers of behaviorist orientation such as Fred Keller, Gregory Kimble, and Leo Postman, leading exponents of the experimental research on the learning process of which Caracciolo was a pioneer in Italy. Before that, sources were practically confined to Pavlov’s reflexology. So it was only at the beginning of the 70’s that in Italy we had a development of the theoretical analysis of behavior, by putting together two fundamental matrices, the psychiatric-reflexological of Ivan Pavlov and the psychological-operational of B.F. Skinner, which until that moment were distinct.

*What was the influence of the thought of B. F. Skinner in your particular professional path?*

I would say that the part of Skinner’s thought that struck me most was his evolutionary perspective, with its emphasis on the continuity from the selection of biological characteristics to the selection of individual and cultural behavior. It was the theme of the lectio magistralis I had the

privilege to hear from the voice of Skinner during the conference in Liège, the “Ist European Meeting on the Experimental Analysis of Behavior,” organized by Marc Richelle.

Skinner participated along with behavior analysts from all around the world. I was part of the group of Italian speakers, mostly from the *Institute of Psychology of the University of Messina*, together with Caracciolo himself.

At that time, declaring themselves behaviorists in Italy was almost like acting as kamikazes, but our interest was great. Our Italian culture, embedded in an “neo-idealist” matrix, inspired by the philosophers Benedetto Croce and Giovanni Gentile, has never been much inclined to the scientific view. Together with the Catholic culture, the idealist philosophers have exercised a strong critique of nineteenth-century positivism, actually slowing down the development of an experimentally oriented scientific culture.

*Since when in Italy did behavioral theories begin to be followed in a more active way?*

In addition to behavioral therapy, which began to be practiced in Italy in the early 70s, an important role has been Behavior Modification. In 1975, the Minister of Public Education Franca Falcucci was responsible for chairing a committee whose task was to carry out a national survey on the “problems of handicapped pupils.” In ’77 she abolished the special classes aimed to educate children with disabilities by promoting a new way of conceiving and implementing inclusive schooling. This opened the way to the possibility of introducing new methods and teaching skills. In my intellectual history, a fundamental role was that of Sidney W. Bijou, author of *Behavior Analysis of Child Development*, in which for the first time the analysis of behavior



was approached in evolutionary terms. His arrival in Italy was a great opportunity for us to be allowed to orient our approach in a "contextualist" way.

*Can you give us some examples of applications?*

We are talking of starting from the stages of the child's development by applying an experimental analysis. Today, this methodology is named Natural Environment Teaching—NET. What are taught are the elements considered of natural interest to the user, by applying the principles of behavioral analysis. Such teaching can take place in any context of everyday life and can be used to develop communication, interpersonal, and cognitive skills. A colleague of Bijou, along with Don Baer, Jesus Rosales-Ruiz identified the so-called "behavioral cusps" or fundamental achievements—such as imitation—which act as a hub for other learning, by facilitating the development of additional skills.

*In what other areas are there now applications of the principles of B. F. Skinner?*

In addition to the studies about the developmental age (and today in particular autism), there is a renewed interest on various levels, such as Organizational Behavior or Behavioral Economics. We are talking about the study of the mechanisms that lead to "choice" behavior. This approach recalls the perspective offered by Skinner in *Walden Two*. Traditionally, economic behaviors are explored by experimental methods that assume a bounded rationality of agents. But economic "choices" systematically violate the axioms of the neoclassical economic theory based on rationality: The "choice" behavior implemented by people follows a logic that is anything but rational. We recently introduced the *Food Dudes* program, which aims to change the eating habits of children acting in the school context, and in particular, increasing the consumption of fruit and vegetables with strategies based on the principles of behavioral analysis. Developed by the University of Bangor, it has been applied in Italy in the elementary schools within two research projects in different Italian regions and now there is also ready a version of the program aimed at children of 3-5 years. To date, the research efforts carried out by IES-CUM on the *Food Dudes* program are the only ones that evaluate the effectiveness of the program in a different linguistic, educational, and cultural context than that of English (UK and USA). The *Food Dudes* program is designed

to be applied directly by the teachers during the mid-morning or lunch break. It is based on a "simple" pattern of behavior: modeling, taste, gadgets. Of course, childhood obesity is a hot topic and would require solutions whose effectiveness is experimentally verified, not just on the basis of "it seems to me that it works".

*Yet today, in Italy, in spite of these interesting results, there is still much fascination related to psychoanalysis. The efforts to make known the thought of B. F. Skinner are still great in relation to the demonstrated success of these applications. Why, in your opinion?*

You said it: Psychoanalysis is fascinating. It is a wonderful literary novel, as said a well-known psychoanalyst himself. It has its roots in the history of mankind, in the myth, even in animism, what Skinner called "the inner man, the homunculus, the possessing demon". Scientific thinking is a recent thing for humans: only for 400 years have we realized that the explanation of the phenomenon has to be found outside of the phenomenon itself. The difficulty of the disclosure of the thought of B. F. Skinner has always been to make a humanity not scientifically oriented understand that behavior, as well as other aspects of nature, can be approached scientifically. Skinner touched some very sensitive topics, such as free will, upon which the Catholic religion has a particular sensitivity. He also had a rigorous way of communicating, very scientific, and science is rigorous. Perhaps also for this reason it has been more difficult to accept that he would address topics related to human "things". One of the ways to make his science more acceptable was the merger operated by the term cognitive-behavioral. But fundamentally, it is a conceptual mistake.

*And here you can reconnect to the cultural matrix of Benedetto Croce.*

Indeed, human behavior includes within itself the knowledge of itself. It is defined on the basis of the organism that acts, and the human organism acts with knowledge. But there is still the idea that thought is "superior" to the behavior. But it is naive to believe that the rational part is the one that governs us through and through. If the world worked on the basis of rational analysis, there would be no problems.

*But then why does cognitivism have and still have such a hold?*

Because it circumvents the problem of rationality

by reifying a metaphor (agency). In this way, people feel as if they were masters of their destiny. The internal agent is nothing more than a renewed theory of the homunculus. No one would now say that an object falls because there is an internal agent. But people think they are more free using the metaphor of the agent inside, in order not to be subject to chance and to external factors. In any case, the internal agent does not solve the problem of freedom of choice, even less if it is situated at the level of neurons. Unfortunately, we frequently read in the media absurd phrases like "discovered the gene of courage or of bravery, or the neuron that controls autism". Frequently the position of Skinner is defined as hyper-environmentalist, which is wrong. The organism is the organism, with all its psychological and biological endowment. Other times, to rebut the possibility of predicting human behavior, is mentioned the uncertainty principle of Heisenberg, forgetting that the probabilistic nature of quantum physics has produced all the electronic technology that we are using (PCs, smartphones, etc.).

*Finally, what can be represented as the most important legacy left by B. F. Skinner?*

Unfortunately Skinner has been much misrepresented. In part, as we said, it can be due to the use of a form of rigorous communication and language. His descriptions and his books are not always easy to read or to translate. Some conceptual and linguistic categories were created on purpose to translate them properly; at the time, for example, when working on a new translation of *Science and Human Behavior*. Much, however, as mentioned above, is due to the sensitivity of the topics covered and the unhinging of some philosophical tenets deeply rooted in Europe. But one thing should not be forgotten: The American Psychological Association voted Skinner as the most important and influential psychologist of the twentieth century. B. F. Skinner has left us a legacy, a strong methodology that should not be forgotten: stop assessing and explaining reality through opinions and reifications of metaphors, such as mind, consciousness or will, and instead work on the basis of evidence from contact with material actions. This will be the path of knowledge, as it has been in the field of medicine, that will lead to results that can improve the lives of mankind. ■



*Edafe Okurume*

Correction:  
The authorship of the article *The Self, Perfected?* (a review of David Freedman's, *The Perfected Self*, in *The Atlantic*) that appeared in the 2013 2<sup>nd</sup> quarter *Operants* newsletter should have been Edafe Okurume.

Correction:  
In 1st quarter, 2014 *Operants* report in the President's Column the last sentence of the fourth paragraph should have read: We are close to completing *Verbal Behavior*, and will soon start on converting the next two books: *Contingencies of Reinforcement* and *Cumulative Record*.

# Operant Principles in Drug Discovery

by Brian D. Kangas, Ph.D.

McLean Hospital, Harvard Medical School

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*Dr. Brian D. Kangas is an Assistant Psychobiologist at McLean Hospital and Instructor of Psychiatry at Harvard Medical School. His primary research program focuses on the development and empirical validation of behavioral methods to assess the effects of both commonly abused drugs as well as the potential side effects candidate therapeutic drugs may have on complex behavioral processes.*

In the spirit of highlighting the enduring impact of Skinner's science on modern society, the use of operant conditioning techniques in drug discovery will be discussed. As the search continues for new drugs to treat a range of medical conditions with greater efficacy and improved safety, operant principles are involved in the preclinical evaluation of nearly every drug introduced to the public. Perhaps the greatest contribution of operant principles to drug discovery is their effective appraisal of a *candidate therapeutic* drug's abuse liability. Abuse liability can be broadly defined as the probability a drug will maintain non-medical, and often maladaptive, self-administration behavior. Put simply, the likelihood it will be abused.

Assessment of abuse liability has obvious value for government and other regulatory agencies seeking to limit the availability of addictive substances. In fact, the pharmaceutical industry is legally required by the Food and Drug Administration (FDA) in the US and the European Medicines Agency (EMA) in Europe to conduct operant-based assessments of abuse liability. Due to this requirement, evaluation of abuse liability usually begins in early stages of drug development in order to assess a molecule's viability. In addition, the Drug Enforcement Agency (DEA) uses these same operant techniques to evaluate emerging drugs of abuse to inform legal control and scheduling under the Controlled Substances Act.

A thorough pharmacologic profile, including information about a drug's receptor binding, bioavailability, pharmacokinetics, and metabolism, is necessary but not sufficient to evaluate adequately a drug's abuse liability. Behavioral data on 1) the subjective effects of the drug and 2) the likelihood it will be addictive are also required. Importantly, operant conditioning techniques can offer highly predictive information relevant to both concerns. And these assessments can be conducted in laboratory animals, which have several advantages including the ability to evaluate during early stages of drug development and to examine a large range of doses over an extended period of time.

First, to examine the subjective effects of a drug in nonverbal animals, the drug discrimination procedure is used. For almost 50 years, drug discrimination has been an effective tool that has provided a wealth of pharmacological information about behaviorally-active drugs including receptor selectivity, potency, efficacy, and indications of abuse liability. This procedure takes advantage of basic operant principles of stimulus control. In its typical arrangement, pre-session administration of a drug produces an interoceptive (internal) stimulus. This interoceptive stimulus can then be conditioned to serve as a discriminative stimulus. For example, responses on one lever can be reinforced following administration of a training drug and responses on another lever can be reinforced



following administration of saline (i.e., no drug). Thousands of drug discrimination studies have clearly indicated that a discrimination using an interoceptive stimulus can be effectively acquired by a wide variety of laboratory animals as well as human subjects. That an internal stimulus can serve as a discriminative stimulus with the same effectiveness as an external stimulus, such as a light or a tone, is interesting. But, for purposes related to drug discovery, the important feature of drug discrimination lies in its ability to examine the similarities and differences in the subjective effects of drugs, a feature that was initially thought too complex and too private to characterize. After the subject has acquired the drug discrimination, other test drugs can be administered on select sessions allowing the experimenter to essentially ask if the test drug *feels like* the training drug. That is, examination of response allocation on the drug- and no-drug-levers reveals the extent to which a test drug *generalizes* to the training drug. These discrimination conditions consistently yield highly selective and replicable generalization gradients that comport well with receptor and other substrate mechanisms as well as verbal reports in humans. Moreover, allowing the subject to report these interoceptive effects has proven to be an excellent means to assess a novel drug's abuse liability. For example, if you have a drug that is known to possess therapeutic value but is also commonly abused in humans (e.g., prescription opioids), and you have a candidate replacement drug known to produce comparable palliative effects, the extent to which the candidate therapeutic generalizes to the known drug of abuse under drug discrimination procedures has been repeatedly demonstrated to be predictive of the abuse potential for that candidate therapeutic.

Second, to determine how likely a candidate drug is to have addictive properties, the drug self-administration procedure provides high levels of predictive validity. This procedure takes advantage of basic operant principles of reinforcement. In its typical arrangement, administration of a drug serves as a consequence that maintains an operant response. For example, responses on a lever under a schedule of reinforcement will result in administration of the drug.

Like drug discrimination, there is a long and extensive literature on drugs as reinforcers. Environmental variables known to reliably affect standard reinforcers like schedule, magnitude, and delay have functionally similar outcomes on responding for drug reinforcers. Again, that administration of a drug can maintain operant responding is interesting. But, for purposes related to drug discovery, the important feature of drug self-administration is the strong correlation between the drugs laboratory animals will self-administer and those that are used and abused by humans. For example, drugs widely abused in the human population such as cocaine, heroin, methamphetamine, alcohol, and nicotine have all been shown to be self-administered under laboratory conditions. Interestingly, the conditions under which various drugs are self-administered are not always identical, and these differences reveal clues as to the environmental and pharmacological variables that are involved in both the initiation and maintenance of drug use. Moreover, they provide important preclinical information regarding abuse liability by evaluating whether, and how robust, a candidate therapeutic drug might initiate and/or maintain drug-taking behavior. That is, if a candidate therapeutic drug is readily self-administered by laboratory animals, it will likely be self-administered by humans.

Many of the most important advances in behavioral pharmacology generally, and drug discovery specifically, have relied heavily on the experimental analysis of behavior. Drug discrimination and self-administration procedures derived from basic operant principles of stimulus control and reinforcement, respectively, provide critical information regarding a drug's abuse liability. Indeed, this information is so valuable, both the FDA and EMA require these assessments before considering approval of any new drug. And therefore, they play an essential role in academic and industry-driven drug discovery by providing an appraisal of a candidate molecule's viability. Here again, we see another example of how Skinner's science laid the foundation for effective and indispensable operant techniques used widely today. ■

## A Unique Journey

Hande Cihan, Research Assistant, (M.A. Student)

Dr. Yeşim Güleç-Aslan (Ph.D.), Asst. Prof.

Department of Special Education

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*Hande Cihan*



*Dr. Yeşim Güleç-Aslan*

In Turkey, various studies have been conducted in areas related to education and psychology, which describe learning and human behavior based on different approaches. In recent years there has been a significant increase in the number of theoretical and applied studies based on applied behavior analysis (ABA). This is especially true in the field of special education, and more specifically in the field of autism spectrum disorders (ASD), which are also our research interests. Examples include the recent affiliation of ABA Turkey as a National Chapter of ABAAI, introduction of a Master's degree program in Applied Behavior Analysis in Autism, a variety of training and treatment programs based on ABA, and an increase in the number of related scientific publications.

Interestingly, despite these improvements, there have been many misconceptions about behaviorism, particularly the radical behaviorism of B. F. Skinner, which is the basis of ABA. As in other countries, there has been a lot of criticism of his science in Turkey (see Özden, Y., & Şimşek, H. (1998). Davranışçılıktan Oluşturmacılığa: Öğrenme Paradigmasının Dönüşümü ve Türk Eğitimi. Bilgi ve Toplum, 1, 71-82.). Critics claim that, according to behaviorism, behavior is simply a matter of stimulus (S) - response (R) reflexes, that behaviorism ignores emotions, that behavior modification is based on only reinforcement and punishment, and that studies conducted in laboratories cannot be duplicated in real life. Because of this criticism and these misconceptions, behaviorism is subject to bias and often goes begging. There are a very limited number of written resources in our native language. The existing ones are primarily journal articles, and very few books. This may be the case because of both limited access to primary sources, and the limited number of people who can translate materials from other languages into Turkish.

In fact, even though we work in the field of ABA, our efforts to understand and learn the philosophy of be-

haviorism have been largely through asking ourselves such questions as: *What is behaviorism? How accurate is it to apply basic principles to practice without a thorough basic knowledge of those principles?* What we learned from asking such questions and reading resources available in our language did not amount to adequate understanding. We felt responsibility to do more than this, in order to better learn ABA.

We started by reading original articles on behaviorism. Three months ago at the suggestion of Dr. Andy Lattal we decided to read B. F. Skinner's books *About Behaviorism* and *Science and Human Behavior*. But, as it turned out, none of Skinner's books have been translated into Turkish. Luckily, we had the chance to go to the U.S. for a conference, but even there it wasn't easy to find these books. In the end, though, we found them and started to read. We both said "wow" from the first chapter, as we realized that we started

to see things through a different window. Now we understand why B. F. Skinner is called the father of applied behavior analysis. To both further our understanding of behaviorism, and to help our Turkish colleagues who do not have access to Skinner's writings, we decided to translate *About Behaviorism* into Turkish at the suggestion of Dr. Lattal.

In the near future, our goal is to complete the translation and share this book with departments of psychology and special education in Turkey, without a profit-making purpose. We thank the B. F. Skinner Foundation for its supportive and positive approach to our translation project. We also offer our special thanks to Dr. Lattal. Due to his encouragement we have started to discover a completely new world. We know that we are only at the beginning, but we really like this new world. It is a such a unique journey! ■

## quote



According to PEW Internet Project's mobile technology research (January 2104), 90% of American adults own a cell phone ... "Abusing and sometimes compulsively using our smartphones can be a real problem," explains Dr. David Greenfield, Assistant Clinical Professor of Psychiatry at the University of Connecticut School of Medicine. ... He describes the smartphone as the "smallest slot machine in the world" because of the variable-ratio reinforcement schedule. When your phone buzzes you can't predict what it will be: if it's something good or exciting, you get a pleasurable neurochemical hit of dopamine.

**Addicted to iPhone**  
by Simon Hill  
MacLife, September 2014

# Robert Mellon, Ph.D.

Athens, Greece

President, European Association for Behaviour Analysis

Interview by Dr. Katerina Dounavi, BCBA-D



Robert C. Mellon is the President of the European Association for Behaviour Analysis. He is professor and chair of the Department of Psychology at the Panteion University of Social and Political Sciences in Athens, Greece, where he established a seven-semester undergraduate course of studies in behavioral philosophy and science, and directs the Laboratory of Experimental and Applied Behavior Analysis. He received his doctorate from the University of North Carolina at Greensboro in 1987, where he trained in both the clinical psychology and experimental analysis of behavior programs; his master's and doctoral research was directed by Richard Shull and Aaron Brownstein. He completed the Clinical Psychology Internship Program at New York University-Bellevue Hospital Center. Mellon was a postdoctoral research fellow at the Center for Developmental Psychobiology at the State University of New York at Binghamton and an NIMH National Research Service Award fellow at the New York State Psychiatric Institute and Columbia University. For four years he travelled Asia, the Middle East and Europe teaching in the Overseas Programs of the University of Maryland. Since 1995 he has lived and worked in Greece, initially at the Hellenic Republic University of Crete. Mellon's empirical and theoretical work, principally in behavioral variability, resistance to change and aversive control, and the implications of these processes in understanding the provenance and treatment of problematic patterns of behavior, has been published in both behavior-analytic and mainstream psychology journals. He is also author of numerous behavior-analytic texts in the Hellenic language and has collaborated on translations of canonical works of B.F. Skinner, including *Walden Two* and *About Behaviorism*.

*How did you become interested in Skinner's work?*

I first encountered Skinner's work in 1978, as a university undergraduate on academic probation. I was loading trucks at night to make rent and tuition, and I did not like school, but I liked loading docks even less. On a whim I registered for a course entitled *Psychology of Learning* in a vague hope that it might help me in my academic struggles. The course was on radical behaviorism and the temporally-extended experimental analysis of behavior-environment relations, and it helped me in every aspect of my life. For some time now I have been privileged to make my living in an effort to replicate this delightful effect in others.

*Could you tell us about your research interests and current projects?*

My core interest is the experimental analysis of processes that characterize so-called "psychological disorders" and the employment of general principles in their scientific interpretation, prevention, and treatment. As B. F. Skinner showed us, such phenomena are best viewed as problematic manifestations of "normal" adaptive processes that, in large measure, emerge from the widespread employment of contingencies of punishment and negative reinforcement in the social control of behavior. With adult human subjects, we are currently studying how the stimuli produced by the problematic perceptual and interpretive behaviour (including repetitively self-abusive thinking and imaging) might acquire reinforcing potency adventitiously (as "safety signals") when they repeatedly accompany motor acts that terminate social threats.

This same process of essentially adventitious control by self-produced signals of safety from social punishment might maintain the bizarre-appearing form of "autistic" motor behavior. We are thus investigating how an understanding of the discriminative processes that inhere in the differential reinforce-

ment of response-form variability might help us to more effectively establish the positive reinforcing potency of self-produced stimuli that differ from those of recently emitted acts. This work is being conducted with children in whom “stereotypic” acts are frequently emitted.

*What can you tell practitioners about your research, how is it applicable to their work?*

When we consider the social significance of the varied phenomena described as “psychopathological”, the number of people working in clinical behavior analysis is very small. Currently, the dominant theoretical perspective in this small group is a “post-Skinnerian” contextualism which is based on a radically generalized conception of the operant class. In the therapeutic approach based on this view, people troubled by their own problematic thinking are instructed to indefinitely suspend all efforts to understand these processes. I hope our own work might give practitioners pause before rejecting (as a source of clinical case formulation leading to effective treatment design) Skinner’s fine-grained interpretation of perceiving and thinking as the privately-observable generation of biobehavioral events that acquire eliciting, reinforcing, discriminative and motivational effects just as publicly-observable events do.

Moreover, I would encourage my fellow practitioners to provide such interpretations of problematic perception and thought to their higher-functioning clients, who might otherwise be baffled, embarrassed and frightened by their own natural and scientifically explicable behavioral processes. I believe that the ability of many troubled persons to acquire a beneficial understanding of their own behavior is frequently underestimated, and their needs are underserved in consequence.

*In the last three decades, you have taught numerous students at undergraduate and postgraduate level. You are also well known in the field for being able to create really engaged students who will serve as the future generation of behaviour analysts in Greece and Europe. Could you identify some key aspects of your teaching that lead to this increase in students’ interest in Behaviour Analysis?*

You are most kind to say so. Skinner taught us that effective teaching is a matter of building on extant repertoires by the gradual adjustment of setting events and consequences, ensuring not only that new discriminative

behavior occurs, but that it is automatically reinforced by the events that it produces. Here as well, we endeavour to follow his lead.

The Hellenic language is spoken by a small minority of the world’s population, and beyond their native tongue, all of our students speak English and at least one other European language. Despite this, we use no English at all in the first three semesters of training in behavior analysis; we build on the well-established and familiar verbal repertoire employed in everyday affairs. This is indispensable to success, because our philosophy and science are, of course, themselves antithetical to the essentialist popular understanding of the nature and provenance of human behavior. So alien a perspective has little hope of success when introduced in a foreign tongue.

Another important aspect of students’ extant repertoire is its general avoidant character. As is true elsewhere, in the Greek education system the chief reinforcing event is the termination of threats of failure, an event generally contingent upon rote repetition of curriculum materials. In this context we are called upon to explain to our students that much of what they always knew about themselves and the people around them, including much of what they have learned in other psychology classes, is directly contradicted by scientific analysis—in a word, wrong! This trauma, which often evokes unconsidered rejection or temporary rote memorization of the behavioral perspective, might be lessened if preceded by a frank and clear presentation of the general process of scientific investigation, proceeding as it does on systematic self-doubt and the arrangement of conditions designed to reveal the inaccuracies, inconsistencies and limitations of our current interpretation of the physical world. It is easier to be wrong when we understand that there is no other option—and that, if we cannot be absolutely right, we can choose to be more effective in our efforts to predict and control behavior.

And of course we want to assess the events that typically function as positive reinforcers, and arrange for their provision consequent to our students’ efforts to understand behavior as an object of scientific investigation in its own right. We provide analyses of many examples of phenomena that already pique their interests, such as lying, sexual preference, procrastination and paranoia, encouraging them to critically analyse and improve upon these ef-

forts. Comparing these efforts to the mentalistic explanations that we all once held is a staple of good-natured humour and fun, further reducing the fear and avoidance of error that are so fundamentally incompatible with scientific inquiry.

*Could you tell us about the status of Behaviour Analysis in Greece when you first started working in this field and how this has changed until its current status?*

When I arrived at the University of Crete in the mid 90's, the first academic departments of psychology in the state university had just been established. There were no systematic courses in behaviour analysis and, naturally, no texts. In a number of psychology and education texts, there were (and indeed still are) brief, precise translations of the misrepresentations of our perspective (as S-R or black box psychology, etc.) that commonly appear in English-language textbooks; nothing more. At the outset I was allowed to teach two courses a year in behavior analysis in exchange for teaching two courses in psychometrics! In collaboration with my students over many years, we developed a comprehensive introductory text and have translated and published canonical works of B. F. Skinner.

Since 2006 the Panteion University Psychology Department has provided us with an opportunity to conduct a seven-semester undergraduate cycle of studies in conceptual, experimental, and applied behavior analysis, including three lecture courses, a laboratory course, a two-semester undergraduate thesis and a one-semester practicum in applied behavior analysis. Unfortunately our faculty development has been delayed due to the IMF-imposed austerity measures; in consequence we cannot yet staff a master's program. However, a number of our students have been able to continue their training elsewhere, and many are working in applied settings in the Hellenic Republic and abroad. This is of course very satisfying, but much remains to be done.

In recent years several private and publicly-funded centers have been founded for the provision of applied behavior analysis services for children with developmental delays. Two of these centers as well as a local private college have established seminar courses in applied behavior analysis. This of course is no substitute for a laboratory-based scientific training program, but it is helping to make our approach better known and appreciated, and less fre-

quently misrepresented.

*Could you highlight some events that have helped Behaviour Analysis progress in Greece?*

Our efforts received a terrific boost from the decision of the executive board of the European Association for Behaviour Analysis (EABA) to hold its 2010 bi-annual conference on the Greek island of Crete. Imagine how important it was for some forty of our dedicated students, most of whom had never laid eyes on but one working behaviorist, to enjoy four days of live presentations of the latest developments in the work of skilled scientists from across Europe and around the globe! Some of these students presented their own research and the balance enthusiastically helped in the conference organization; all rightfully felt, for the first time, part of the international behavioral community.

This event led directly to the founding of the *Hellenic Community for Behavior Analysis*. The organization's name is a direct reference to Skinner's use of the term "verbal community," as its purpose is to foster the development and dissemination of our philosophy and science among speakers of the Hellenic language. Its first two-day scientific conference, which was free and open to all interested parties, was held in 2013 (Greek speakers can find videos of many presentations on the community's webpage [www.behaviorism.panteion.gr](http://www.behaviorism.panteion.gr)).

Of course, it is equally important that we retain and further develop our relationship with the international scientific community and Hellenic behaviorism is well represented at the September 2014 conference of the EABA in Stockholm, Sweden. Moreover, we will have the honor of hosting the EABA's first Summer School of Behavior Analysis in July of 2015; an event that will bring together advanced students and accomplished instructors from across Europe for a two-week intensive period of scientific and social exchange.

*As President of the European Association for Behaviour Analysis (EABA), what are your thoughts about the current status of Behaviour Analysis in Europe?*

Well, things are looking up. There are a fair number of quality advanced training programs taught in a range of languages, several impressively large and well-organized national behavior-analytic organizations, and an EABA that has truly made strides in establishing a pan-European

## about the interviewer



Dr. Katerina Dounavi (Psychologist, BCBA-D) is a Lecturer in Applied Behaviour Analysis and Autism at Queen's University Belfast, where she also serves as the Deputy Director of the Centre for Behaviour Analysis (<http://www.qub.ac.uk/cba>) and Coordinator of the MSc in ABA (<http://go.qub.ac.uk/MScABA>). Her responsibilities include, among others, coordinating and teaching in the MSc in ABA, teaching in the MScASD, supervising research students and conducting research in the areas of behaviour analysis, education, autism, verbal behaviour, learning disorders and related disciplines. Additionally, she is the Clinical Director and founder of Magiko Sympan Centre in Greece ([www.magiko-sympan.gr](http://www.magiko-sympan.gr)), the first centre to be directed by a BCBA-D in her country. She serves as a consultant/supervisor in a number of countries in Europe and beyond (e.g., France, Germany, Spain) where she offers evidence-based educational services to children with autism and other developmental or learning disorders and their families and training to students and professionals.

forum in which substantial cultural differences might enliven and enhance rather than retard the development and dissemination of a science of behavior. In some countries the cultural penetration of behavior-analytic thinking rivals or even exceeds that in the U.S. (unfortunately, that is not saying much). In many other countries such as my own, we have just gotten started down the very long road to an equitable sharing of the fruits of the behavioral enlightenment.

*Can you identify a number of obstacles in the dissemination of Behaviour Analysis in Europe and suggestions on how to overcome them?*

I have already touched on the difficulties related to the wide range of European verbal communities. Beyond that, it seems to me that the contingencies (and lack of contingencies) that need to be addressed if Skinner's "happy few" are ever to become "many" are pretty much the same everywhere.

After Skinner's death, our public criticism of the almost universally-held belief in Autonomous Man, with all of its attendant implications for social policy, has been negligible. In a period in which internet access to scientific analysis and the rhetoric of enlightenment has led millions of believers to question the existence of celestial spirits, even the leaders of "new atheism" assert with assurance that an Unmoved Mover resides in our minds, characters, or nervous systems, blithely actuating our thoughts and actions. Behaviorism simply cannot coexist with Autonomous Man, yet we seem to be doing little to hasten his demise.

If we are to help people past an extensive history of reinforcement for spurious beliefs, we must arrange for powerful events to occur contingent upon experimentally-derived interpretation. To think like a behaviorist, they must get something really good out of it. But we have been peculiarly hesitant to offer people help with the problems that they really care about when they try to think behaviorally. Nobody needs a natural science interpretation when things are going well. We need it when we cannot understand our own behavior or someone else's; when we seem to be acting for no reason, or against our own interest. This is why abnormal psychology is always, and by far, the most popular psychology class.

Yet, as a field, a large proportion of our clinical interpretative efforts are devoted to relatively rare conditions that many or most people have very little experience with. Applied behavior analysis has been extraordinarily successful with otherwise intractable clinical conditions such as autism, but we have allowed the field, in the public eye at least, to become virtually synonymous with its treatment. If people are to become behaviorists, behaviorism must help them with the problems that are troubling *them*. Problems like anxiety, depression, difficulties with food or drink, obsession, paranoia and related interpretative difficulties, sexual dysfunction, aggression, self-abuse. If people are not getting what they want and need for thinking about behavior the way that we do, we should not expect them to do so. Again, if we want to change behavior, we must utilize the extant reinforcers.

But we should not limit contact with the behavioral position to the relatively aversive contexts of the psychol-

ogy classroom and clinic. Just think how many behavior analysts have been affected by a chance reading of *Walden Two*. We published our Greek translation just one year ago, and it is remarkable how many people have discovered behaviorism in the context of a good read on the nature of the “good life” and its practical realization (a topic especially reinforcing in the midst of an economic crisis). Yet here we are, going on seven decades later, and *Walden Two* remains the sole example of behavior-analytic fiction! And not one fictional film to counter with when people cite *A Clockwork Orange*. Why are we not utilizing such effective means of changing how people think about our science?

Perhaps we are tripping up in a failure to think about dissemination itself as a problem for applied behavior analysis. It seems doubtful that our failure to more effectively propagate behavioral thinking is based in the weakness of our basic principles. A proper test would be a redoubling of our efforts to apply them. ■

## Welcome to the Editorial Staff, Sheila Habarad!



In September, 2014 Sheila Habarad became the Assistant Editor-in-Chief of *Operants*. Our readers have enjoyed her contributions to the Report in the past, and in this issue her interview with Otto Fad, the Elephant Manager in Busch Gardens in Tampa, is our Cover Story (see p.25). Sheila will become increasingly involved in planning and production of future editions of *Operants*.

Ms. Habarad is a part of Morningside Academy’s Faculty in Seattle, WA. She spent previous thirteen years in the field of behavior analysis working with public schools. She is a Board Certified Behavior Analyst who received her Master of Arts in Behavior Analysis from Ball State University. Sheila has been an active member with Indiana’s state chapter of ABA-I, serving as Secretary, Vice President, President and Conference Chair over the past five years.



# Otto Fad

## Elephant Manager, Busch Gardens Tampa, Florida

cover  
story

interview by Sheila Habarad

*What led you to animal training?*

**A**t the time my career objective was to make documentary films of the dolphins and whales at SeaWorld. However, when I applied for a job in the video department I had the opportunity to talk with Thad Lacinak and Ted Turner. They asked if I'd be interested in animal training and that's where it began. So, I just fell into animal training where I was lucky enough to learn behaviorism hands on with the sea lions and otters from Lacinak and Turner. Both Thad and Ted had been profoundly impacted by positive reinforcement. This was back in 1987, it was a great time to start, we were working out a lot of details while using a strictly positive approach, extinction procedures, and the least reinforcing stimulus.

*When you started working at SeaWorld, was this the initial push for utilizing positive reinforcement and operant techniques with marine mammals?*

No, the original push for advanced operant techniques and positive reinforcement came from Bruce Stephens and David Butcher, both of whom studied B.F. Skinner and were considered pioneers in the animal world. Lacinak and Turner's approach were highly influenced by both Butcher and Stephens. Karen Pryor has also been another pioneer in the animal training world propelling Skinner's operant techniques and positive reinforcement forward.

*How have you used these advanced operant techniques and positive reinforcement?*

Positive reinforcement techniques were originally used for water ballets of killer whales. When success was observed in the marine world we were able to transfer the concept to husbandry training of terrestrials. More specifically, the elephants are trained with positive reinforcement to learn the routines for different veterinarian procedures. If the veterinarian needs to draw blood the Busch Gardens Tampa (BGT) Elephant Team will develop a behavior protocol and work closely with the vet staff to ensure active participation from the elephants rather than an elephant having a sedative position. For example, an elephant receives a blood draw one time per week. During this routine, the blood is drawn from the posterior position of the ear. The elephant voluntarily comes against a barrier, leans against the barrier, and then sticks the ear through a window. Once the ear is through the window, the elephant waits while the vet looks for the blood vein and takes the sample. When the elephant has her ear in the window and is waiting she is communicating to the vet staff that



*Otto Fad has been an Elephant Manager in the Pachyderm Palace at Busch Gardens Tampa (BGT) since 2004. He manages the BGT Elephant Team, consisting of ten Animal Care Specialists and six elephants; five of which are female and one male. Otto has spent 28 years in animal training, starting off with sea lions and otters at Sea World for a short period of time. After a year he started working with killer whales where he spent 16 years honing the principles of behaviorism; specifically positive reinforcement. These advanced learning techniques were abundant when it came to marine mammal training, however they were scarcely utilized in training terrestrials. In the early 90's Bush Gardens bought Sea World and the two organizations merged. This merge not only brought the marine mammals in an environment near the terrestrials, it also introduced a new methodology of teaching the land animals. In 2004, Otto was able to remove his wetsuit and step into the Pachyderm Palace to reconstruct the BGT Elephant Team from scratch utilizing the same principles of behaviorism that he applied with the marine mammals. Otto and his fellow trainers consider themselves Behaviorists, as they are constantly analyzing not only the behavior of the specific animal they are working with but how their behavior might be impacting the animal.*

she is ready for the sample to be taken.

The BGT Elephant Team patiently trains the pattern for the elephants to participate actively in blood draws and other husbandry routines using highly reinforcing touch and edibles for correct responses. A fine line is walked, as just active participation from the elephants itself is paired closely with the *least reinforcing stimulus* (LRS) to teach them that failure is okay. If the elephant does not make the correct choice, the LRS is there to keep them trying again. Basically, the LRS lets the team members reinforce incorrect



behavior at a lower frequency as long as the elephant is continuing to participate while staying calm and relaxed. We are seeking out the positive behavior and trying to reinforce each specific behavior to increase the likelihood that the elephants will stay with them in the training.

We are continuously trying to identify what they did differently when the elephant was successful versus unsuccessful at completing a specific routine. The elephant's behavior is dynamic, impacted by a wide variety of things ranging from emotional states, recent experiences, the immediate environment, and available reinforcers. Team members are constantly taking session notes and analyzing the elephant's likes and dislikes.

The training environment that the BGT Elephant Team has created with their elephants carries over into how team members work with each other. They are focused on how to increase the most effective positive behavior through positive reinforcement. As a result the Pachyderm Palace is a small powerful collaboration focused on positive behavior unlike society where lines are drawn by negative behavior. For example, everyone has the same feeling to-

wards the police when we see them on the road. Police officers don't pull us over to say; "Hey, great job on merging over to the other lane with your turn signal on!" The LRS lets all types of animals know that it is okay to make a mistake.

*How do you and the other Behaviorists let the elephants know when they did something correct?*

Specifically we utilize a dog signal as a bridging stimulus. The dog signal is similar to a clicker; it is a whistle that is clear, concise, consistent, and easy for the elephant to hear in a noisy environment and leaves the Behaviorist's hands free. The whistle's function as a marker is really effective. One can catch the smallest snip bit of behavior that you can't when using verbal communication. Verbal praise really slows down the process, leaving lots of encoding and decoding at both ends for both the trainers and animals. TAG Teach utilizes the exact same principles. While we might use some verbal praise it is not used as a bridging stimulus. Even so, we still have to be careful that the praise that might be used has value. To do that, we condition the praise as a reinforcer by taking the time to pair it with food or tactile touch, especially at the beginning of a relationship between an elephant and trainer. In the end, the real proof is always with the increasing behavior. We always analyze what it is that we are doing when the elephants are successful as well as any new behaviors that we might see an elephant engaging in.

Tactile reinforcement is considered a secondary reinforcer and we will condition it as such when introducing new trainers. While most animals do not need tactile reinforcement to survive, a colossal amount of touching has been observed across elephants to maintain social bonds. Elephants respond to tactile reinforcement on a deeper, more visceral level.

*What type of economy do you provide for the elephants (open vs. closed)?*

The elephants have mostly an open economy. They always have access to food and water 24 hours a day. Deprivation is not utilized in any manner. However, there is a balance of reinforcement when considering chronology, location, and any aspect of behavior. There might be times when we veer towards a closed economy but that will only be for a very short time, such as a transition. The Behaviorists do not look at what they will be taking away from the

elephants; rather they consider what it is that they are doing right in that moment. The open economy makes us better behaviorists. The onus is on us to deliver when we observe the desired behaviors since the elephants can walk away from us at any moment. We could never rely on deprivation. Deprivation breaks down trust, and trust is the foundation we build when working with elephants.

The elephants are intelligent animals that have large behavior repertoires and a lot of flexibility paired with a history of lifelong learning. They develop these brains to succeed in complex and challenging environments. The elephants enjoy the structure of interactions with humans, their training and learning. They anticipate the consequence or the result from making a decision. It does not hinder us to provide the same reinforcer during training that they can access outside of the training paradigm. There is an intrinsic element of the reinforcer that the elephant receives from the Behaviorist during the session. Again, elephants are smart animals, very aware of their environment. They are able to discriminate between people. It is very rewarding when you are just walking around the Palace and the elephant leaves her food and activities to come greet you. One elephant will always stop what she is doing, walk up to me and grab my hand with her trunk to have her tongue rubbed.

When I see the elephants enthusiastically approaching different members of the BGT Elephant Team, leaving their food and activities behind, I know that we are doing something right.

*Has your team been able to utilize classical conditioning techniques when*



*working with the elephants?*

A bit of classical conditioning has been used when we initially begin shaping some of the husbandry routines with the elephants. For example, when we train the elephants to swallow medication, we might have to present a piece of food with the medication the first time so that the elephant will open his mouth. Letting the elephant elicit the initial behavior, opening her mouth, after seeing the piece of food – we are then able to slowly fade out the food while she learns to open her mouth when she sees the medicine

alone. We will chain all the behavioral steps that are necessary for the elephant to readily walk up to the spot where she receives her medicine and swallow. We want her to be able to know when it is time to take her medicine and give her that opportunity to choose to take her medicine. Working



with the elephants and their respondent behaviors has made us take their emotional states into consideration.

An elephant's emotional state is something we have to acknowledge. It is a filter that impacts behavior. It does not *cause* behavior. The emotional state will throw off the balance of reinforcement in one direction or another.

The elephant might be in an emotional state that requires a thicker schedule of reinforcement than the Behaviorist initially put in place. The Behaviorist will then need to be able to alter the rate of reinforcement to keep the elephant participating. In order to establish and maintain the elephant's trust that the reinforcer will be delivered, the emotional state has to be recognized.

Their emotional states also have to be acknowledged when the elephants are in training near other elephants. This is where providing the least reinforcing stimulus at a lower rate is critical. For instance, when one elephant is getting reinforced at a high rate due to providing the correct responses next to another elephant that is making errors, the Behaviorist must recognize this and uphold a low rate of reinforcement to maintain the second elephant's engagement. Meanwhile it is vital that the Behaviorists at the Pachyderm Palace are able to differentiate the magnitude of the reinforcer that is delivered when the elephant makes errors and correct responses. They have to provide reinforcement with a significant contrast between magnitudes and rate that so the elephants know when they are making the correct response. These emotional states are tremendously specific and dynamic to each training situation and cannot be ignored.



The elephants have developed learning histories that they have been using over the past 10 years. If they don't want to participate they will walk away, and the habitat is large enough for them to leave the training and go munch on hay, play in the pool, etc. Most of the animals

want to participate which reflects the effect of operant conditioning paired with a highly reinforcing environment.

*How has the science founded by B.F. Skinner impacted your work?*

Skinner's presence has profound impact on all the Behaviorists that work alongside me. The term, *behaviorist* is

a more accurate and flattering term than *trainer* which I would use to describe less advanced methods. B.F. Skinner would be a contributor inspiring advancement and inquiry on animal behavior across generations.

*Do you have a favorite book by B.F. Skinner?*

This is a tough call because he was such a prodigious author. The first book of Skinner's that I studied was *Behavior of Organisms* and dove into his work from there. It was amazing how with contingencies of reinforcement, he re-directed the field from the Freudian movement. I am inspired by the prolific work Skinner produced. His statement hits home to me: "We shouldn't teach great books; we should teach a love of reading. Knowing the contents of a few works of literature is a trivial achievement. Being inclined to go on reading is a great achievement." We at the Pachyderm Palace are proud of the great strides we have made over the past ten years; yet, we are humble that there is still so much to learn. ■

# Maria Helena Hunziker, Ph.D.

## University of São Paulo, Brazil

profiles

interview by Monalisa Leão

**M**aria Helena Hunziker got her doctoral degree in Experimental Psychology from the University of São Paulo (Brazil) and did post-doctoral work at Reed College, USA and University of Seville, Spain. Currently, she is an associated professor at the University of São Paulo (Brazil), where she was Coordinator of the Graduate Program in Psychology and Head of the Department. Furthermore, she acts as an adviser in the Graduate Program in Experimental Psychology (PSE), in Neuroscience and Behavior (NeC), and she coordinates the laboratory of Biobehavioral Analysis in the same University. Her research activities focus on learned helplessness and operant variability, as part of the large areas called Aversive Control and Biobehavioral Analysis.



Dr. Hunziker

**M**aria Helena Hunziker é Doutora em Psicologia Experimental pela Universidade de São Paulo, Brasil e cursou seu pós-doutorado no Reed College, USA e na Universidade de Seville, Espanha. Atualmente, é Professora Associada da Universidade de São Paulo (Brasil), onde exerceu cargo de Coordenadora do programa de Pós-Graduação em Psicologia e de Chefe de Departamento. Além disso, atua como orientadora nos Programas de Pós-Graduação em Psicologia Experimental (PSE) e em Neurociências e Comportamento (NeC) e coordena o laboratório de Análise Biocomportamental dessa mesma universidade. Suas principais linhas de investigação abrangem os temas de desempenho aprendido e variabilidade operante, inserindo-se nas grandes áreas denominadas Controle Aversivo e Análise Biocomportamental.

*I would like to start by asking you to tell us a little bit about yourself. What events helped you become a Behavior Analyst and why have you been interested in this area of Psychology?*

Like most undergraduate students, I chose Psychology to act in the clinical area. Back then, I thought the clinic involved a room with couch and a picture of Freud on the wall. The catchphrase “Freud explains” was often used by laymen, which shows how Psychology was identified culturally with the psychoanalytic approach. So it was a huge surprise when I discovered that Psychology wasn’t only Psychoanalysis. I discovered it in classes of preparatory coursework for the entrance exam in the year 1969. The Biology teacher (Hélio Guilhardi, future behavior analyst, then an undergraduate student) talked to us about a more objective and scientific Psychology that was in full growth, called Behavior Analysis. He discoursed on possibilities for studying humans in a much more objective and

*Gostaria de começar pedindo que nos contasse um pouco de sua história. Quais eventos contribuíram para você se tornar uma analista do comportamento e porque se interessou por essa área da Psicologia?*

Como a maioria dos alunos de graduação, eu escolhi a Psicologia pensando em fazer clínica. Naquela época, na minha visão a clínica envolvia uma sala com divã e uma foto do Freud na parede. O bordão “Freud explica” era muito utilizado por leigos, o que mostra o quanto a Psicologia era identificada, culturalmente, com a abordagem psicanalítica. Portanto, foi uma enorme surpresa quando descobri que a Psicologia não era apenas a psicanálise. Essa descoberta se deu nas aulas do cursinho preparatório para o vestibular, no ano de 1969: o professor de biologia (Hélio Guilhardi, futuro analista do comportamento, então aluno de graduação) nos falava sobre uma psicologia mais objetiva e científica que estava em franco crescimento, chamada Análise do Comportamento. Ele discorria sobre possibilidades de olhar o ser humano de uma maneira muito mais

functional way than I had heard before. I was fascinated by the possibility of Psychology as a science and proposals to study experimentally psychological issues, especially to deal with human and psychological problems in a naturalistic way, related to the environment, without that “magical” aspect that was usually related to psychological phenomena. So even before starting my undergraduate studies I was seduced by Behavior Analysis. The contact with other psychological approaches during my undergraduate studies confirmed that Behavior Analysis would be my career choice. During my undergraduate studies, I interned at the first clinic that used behavioral analytic principles in Brazil (coordinated by Dr. Luiz Otavio Queiroz Seixas). But even seeing the excellent work that was being done there, it was basic experimental research that interested me more and that was what guided my choices during my post-graduate studies and professional life.

*What is your current main interest in this area and why have you been interested in this research line?*

I’ve been working on various topics such as learned helplessness, operant variability, and psychopharmacology. However, they are all related to the theme, which I consider my central point of interest, of “aversive control”. Since my Master’s degree thesis, and continuing during my Ph.D. studies and in some other projects, I have been researching on “learned helplessness”, a theme which continues to be analyzed by many of my students. I have also researched operant and respondent processes such as escape, avoidance, punishment, conditioned suppression, and conditioned “fear”. When I started my research in 1970, there were many studies and publications on aversive control. However, this theme was almost completely abandoned by behavior analysts in the following decades. Nevertheless, I continued in this research area because I believe that knowledge of aversive control is essential for understanding behavior as a whole. For example, when we identify which operations or steps linked to positive reinforcement (deprivation, extinction, intermittent reinforcement or post-reinforcement period) may have aversive functions, it is impossible to maintain the dichotomy “aversive versus appetitive” because it isn’t one OR the other, but one AND another. Since control is inevitable because it is part of natural processes, in my view, aversiveness is part of any contingency. It represents the other side of the coin with positive reinforcement.

concreta e funcional do que eu havia ouvido até então. Fiquei fascinada com a possibilidade de a psicologia ser uma ciência, de se propor a estudar experimentalmente as questões psicológicas, especialmente por olhar o ser humano e os problemas psicológicos de uma forma naturalista, relacionada com o ambiente, sem aquela “magia” que as pessoas supunham no psicólogo. Assim, antes mesmo de iniciar minha graduação eu já estava seduzida pela Análise do Comportamento. O contato com outras abordagens psicológicas ao longo da graduação apenas me confirmou que a Análise do Comportamento seria a minha opção profissional. Estagiei, nessa etapa de formação, na primeira clínica que utilizou os princípios analíticos comportamentais no Brasil (sob a coordenação do Dr. Luiz Otávio Seixas Queirós). Porém, mesmo vendo o excelente trabalho que era realizado ali, foi a pesquisa experimental básica que me fascinou mais intensivamente, dirigindo meus passos na pós-graduação e na vida profissional.

*Qual é o seu principal interesse atual na área e porque tem se interessado por essa linha de pesquisa?*

Venho trabalhando em temas diversos, tais como desamparo aprendido, variabilidade operante e psicofarmacologia. Porém, todos eles têm uma mesma linha condutora, que considero o meu ponto central de interesse, que é o controle aversivo. Desde a minha dissertação de Mestrado, continuando nas teses de Doutorado e Livre-Docência, minhas pesquisas foram sobre o “desamparo aprendido”, tema esse que continua sendo abordado por diversos dos meus orientandos. Também tenho pesquisado processos operantes e respondentes, tais como fuga, esquiva, punição, supressão condicionada e condicionamento de “medo”. Quando comecei minhas pesquisas (década de 1970) havia muitos estudos e publicações sobre controle aversivo. Contudo, esse tema foi praticamente abandonado nas décadas seguintes pela maioria dos analistas do comportamento. Apesar disso, eu me mantive nele por acreditar que o conhecimento sobre controle aversivo é indispensável para a compreensão do comportamento como um todo. Por exemplo, quando identificamos que diversas operações ou etapas vinculadas ao reforçamento positivo (privação, extinção, intermitência do reforço ou o período pós-reforçamento) podem ter funções aversivas, fica impossível manter a dicotomia “aversivo X apetitivo”: não é um OU outro, mas sim um E outro. Assim como o controle é inevitável, por ser parte dos processos naturais, entendo que também a aversividade é parte de toda e qualquer contingência,

So, to understand behavior you must understand this aversive control component and for that, many studies need to be conducted in the area.

*Aversive control was for a long time a topic of little interest in the context of Behavior Analysis. In your opinion, what variables were responsible for such negligence?*

In my point of view, one of the main reasons for such negligence was the animal rights movement. From 1980s the militancy against the use of animals in experimentation has become more organized, which coincides with the beginning of the decline of aversive control studies. Logically, if there are restrictions on the use of animals in research, these constraints are further exacerbated if the research requires the animal to be exposed to conditions that create discomfort. Unfortunately, it is impossible to research aversive control experimentally without exposing the subject to aversive conditions! Moreover, it is necessary to consider that aversiveness is present in nature, which requires its study. Hence, a great practical conflict is established. It is important to emphasize that the restrictions on research about aversive control have been made without an analysis of the discomfort caused to the animal. For example, it has been ethically acceptable to manipulate deprivation of water and food for animals as a way of enabling the use of positive reinforcement; however, people question the use of a few seconds of low intensity electric shock released in the paws of the animal, which enables the study of punishment and negative reinforcement. Does the mouse staying twenty four hours without food or water suffer less than one getting some low intensity shocks for a short period of time? Without a doubt, the discomfort caused by shock is more visible. But can ethics of action be evaluated from the visibility of the effect? I don't know of any research that quantifies the discomfort of both experimental procedures, but our scientific community has dealt with them in a different way, since they restrict one and accept the other. Another example of this "demonization" of electric shocks is the fact that countries where their use in research with animals is forbidden, free up research with use of the CMS model (chronic mild stress). I've used both this model as well as shock, and so I question how "mild" it is to expose animals chronically to small discomforts for weeks on end. The physiological effects that I already identified according

representando o outro lado da moeda que tem em uma face o reforço positivo. Então, para se compreender o comportamento é preciso compreender esse componente aversivo do controle. E, para isso, muitos estudos precisam ser conduzidos na área.

*Controle aversivo foi, durante muito tempo, um tema de pouco interesse no contexto da Análise do Comportamento. Em sua opinião, quais foram as variáveis responsáveis por tal negligência?*

Do meu ponto de vista, um dos principais motivos para isso foi o movimento pelos direitos animais. A partir dos anos 1980 a militância contra o uso de animais em experimentação se tornou mais organizada, período que coincide com o início do declínio dos estudos sobre controle aversivo. Pela lógica, se há restrições para o uso de animais em pesquisas, essas restrições ficam ainda mais exacerbadas se a pesquisa exige que se exponha o animal a condições que gerem desconforto. Infelizmente, não há como pesquisar experimentalmente o controle aversivo sem expor o sujeito a condições aversivas! E também não há como negar que a natureza é feita de muita aversividade, o que exige seu estudo. Daí, um grande conflito prático se estabelece. Acho importante destacar que as restrições a pesquisas sobre controle aversivo têm sido feitas sem uma análise sobre o desconforto gerado ao animal. Por exemplo, eticamente tem sido aceitável manipular privação de água e alimento para animais como forma de viabilizar o uso de reforço positivo; contudo, questiona-se o uso de poucos segundos de choque elétrico de baixa intensidade liberado nas patas do animal, o que viabiliza o estudo da punição e do reforçamento negativo. Será que o rato ficar 24 horas sem água ou alimento é menos sofrido ou desconfortável do que receber alguns choques elétricos pouco intensos, por um curto período? Sem dúvida, é mais visível o desconforto gerado pelo choque. Mas a ética se situa na visibilidade do efeito? Não conheço nenhuma pesquisa que quantifique o desconforto de ambos os procedimentos experimentais, mas a nossa comunidade científica tem lidado diferentemente com eles, restringindo um e aceitando outro. Pode-se citar também como exemplo dessa "demonização" dos choques elétricos o fato de que em países onde seu uso em pesquisa com animais é proibido, libera-se a pesquisa utilizando o modelo de CMS (*chronic mild stress*). Como eu já utilizei tanto esse modelo como os choques, questiono quão "mild" é expor os animais, cronicamente, a pequenos desconfortos, por semanas a fio. Os efeitos fisioló-

to CMS model (change of the hormonal cycle, infertility, reduced parental care, and others) lead me to suppose that the chronicity of “soft” discomfort is perhaps even more damaging to the subject than acute exposure to some occasional discomfort less mild as that generated by the electric shock. However, visually it is not possible to note this. My hypothesis is that for most people, the application of electric shock is associated with torture and so they reject emphatically the use of electric shock with animals. It is clear that the use of electric shock in research is not related to torture (which can also be performed without shocks), but to understand its benefits people would need a minimum of analysis on the motives, methods and benefits that research brings.

Another reason I am responsible for distancing researches from studies about aversive control is that it isn't pleasant to be the cause of the suffering of others. The first time I released shock in a rat I trembled more than it. It was terrible! After this, I got used to these respondents, and the need for this kind of research led me to continue working in this area. It is never good to know that we cause the suffering of others, even if that other is a rat, an animal rejected in our culture. Thus, it is easier for personal comfort that people avoid this type of research. However, again I think that this has to do with the visibility of suffering involved in the experimental situation. For example, failure to obtain positive reinforcement also involves suffering to the subject (“frustration?”), but it is less visible than that generated by shock. Consequently, anyone who works with discriminative training, for example, is considered not working with aversive control. Is that not so?

*How would you assess the current level of productivity about aversive control in terms of scientific articles and research developed in graduate programs in Brazil?*

In the international literature, it is easy to identify that there are actually few articles reporting research on aversive control. Same in Brazil. As far as I know, we have only two study centers that have systematically developed research on this topic: one at USP in São Paulo, which since the 1970s produces research in this area, and most recently another, at UFPA in Belém. But, my guess is that this trend is changing. It is based on the type of

gigos que já identifiquei em função do CMS (mudança de ciclo hormonal, infertilidade, redução dos cuidados parentais, entre outros) me levam a supor que essa cronicidade do desconforto “suave” é tão ou ainda mais prejudicial ao sujeito do que a exposição aguda a alguns desconfortos pontuais menos “suaves”, como o gerado pelo choque elétrico. Contudo, visualmente não se percebe isso. Minha hipótese é que, para a maioria das pessoas, a liberação de choques elétricos está associada à tortura e por isso elas rejeitam tão enfaticamente seu uso com animais. É claro que o uso do choque elétrico na pesquisa não tem nada a ver com o seu uso em tortura (que também pode ser executada sem choques), mas para compreender isso as pessoas precisariam ter um mínimo de análise sobre os motivos, métodos e benefícios que a pesquisa traz. Outro motivo que suponho ser responsável por afastar os pesquisadores do estudo do controle aversivo é que não é nada agradável ser a causa do sofrimento do outro. A primeira vez que liberei choque em um rato eu tremi mais que ele. Foi péssimo! Depois, a habituação desses respondentes, somada à necessidade desse tipo de pesquisa, fez com que eu permanecesse nela. Mas nunca vai ser agradável saber que somos a causa do sofrimento do outro, mesmo esse outro sendo um rato, animal rejeitado na nossa cultura. Assim, é mais fácil, para o conforto pessoal, que as pessoas se esquivem desse tipo de pesquisa. Contudo, novamente considero que isso tem a ver com a visibilidade do sofrimento envolvido na situação experimental. Por exemplo, a não obtenção do reforço positivo também envolve sofrimento ao sujeito (“frustração?”), mas isso é menos visível do que o gerado pelo choque. Consequentemente, quem trabalha com treino discriminativo, por exemplo, não se considera trabalhando com controle aversivo. Será?

*Como você avalia o atual patamar de produtividade sobre controle aversivo, em termos de publicação de artigos científicos e pesquisas desenvolvidas nos programas de pós-graduação no Brasil?*

Na literatura internacional, pode-se facilmente identificar que atualmente há poucos artigos que relatam pesquisas sobre controle aversivo. No Brasil ocorre o mesmo. Até onde sei, temos apenas dois centros universitários que têm desenvolvido sistematicamente pesquisas sobre esse tema: um na USP, em São Paulo, que desde os anos 1970 produz pesquisas nessa linha, e outro, mais recente, na UFPA, em Belém. Porém, minha suposição é que essa tendência está se modificando. Ela se baseia no tipo de tema que atualmente me solicitam apresentar em congressos: anteriormente, eu recebia convites para apresentar



topic currently requested of me to present at conferences. Previously, I received invitations to present on various topics. But this year I was invited to give lectures in five scientific events held in different regions in Brazil, all asking me to speak about aversive control; the same theme that I was asked to teach in an annual course for behavioral analytic therapists. This interest in aversive control area suggests to me that the issue is coming to be regarded as relevant to students of behavior in both basic and applied levels.

*How do you rate the importance of studies on aversive control to the general understanding of behavior and what were the main contributions of research on this topic in Brazil?*

As said earlier, in my point of view, a behavior analyst is incomplete if he overlooks aversive variables present in different contingencies, whether operants or respondents. I suppose this is true both in the laboratory and in applied situations. However, what I see among many professional colleagues are ideological constraints, without an adequate scientific analysis. Interestingly, the same researchers who condemn the use of electric shock in animal research make use of the CMS model. In the clinic, the same therapists who claim it is unacceptable to implement any aversive procedure using the removal of contingent attention to inappropriate behaviors (negative punishment), extinction (through discriminative training or differential reinforcement), request the patient to report facts that produce suffering (essential to the therapeutic process). So there is a lot of inconsistency and lack of analysis on the issue. The restriction should not be about the aversive control itself, but how it is being used. Of course no one defends the indiscriminate use of aversive control (or the misuse of positive reinforcement). However, I consider it an unscientific attitude that behavior analysts satisfy with visibility of the discomfort caused by some procedures without analyzing in more detail what kind of control would be more effective (research) and/or beneficial to the subject (in practice) not only in this situation but also in the medium and long term.

*Finally, your main line of current research corresponds to experimental studies. However, you have been interested, throughout your career, in the development of studies of theoretical and conceptual nature. How do you assess the relation of these two types of research in Brazil*

temas diversos, mas nesse ano fui convidada a proferir palestras em cinco eventos científicos, realizados em diferentes regiões no Brasil, todos solicitando que eu falasse sobre controle aversivo; o mesmo tema que me foi solicitado a dar em uma disciplina que ministro anualmente em um curso de especialização para terapeutas analistas comportamentais. Esse interesse me sugere que o tema está voltando a ser considerado relevante para os estudiosos do comportamento, tanto em nível básico como aplicado.

*Como você avalia a importância dos estudos sobre controle aversivo para a compreensão geral do comportamento e quais foram as principais contribuições das pesquisas sobre o tema no Brasil?*

Conforme disse anteriormente, do meu ponto de vista, um analista do comportamento é incompleto se não considerar as variáveis aversivas componentes das mais diferentes contingências, quer operantes ou respondentes. Suponho que isso é verdade tanto dentro do laboratório como em situações aplicadas. Contudo, o que vejo entre muitos colegas são restrições de cunho ideológico, sem uma adequada análise científica. Curiosamente, os mesmos pesquisadores que condenam o uso do choque elétrico em pesquisas com animais fazem o uso do CMS. Na clínica, os mesmos terapeutas que afirmam ser inaceitável o uso de qualquer procedimento aversivo utilizam a retirada de atenção contingente a comportamentos inadequados (punição negativa), a extinção (em meio a treinos discriminativos ou reforçamento diferencial), ou ainda a solicitação para o paciente relatar fatos que geram sofrimento (indispensável para o processo terapêutico). Portanto, há muita incoerência e falta de análise sobre a questão: a restrição não deveria ser quanto ao controle aversivo em si, mas a como ele está sendo utilizado. É claro que ninguém defende o uso indiscriminado do controle aversivo (nem do reforço positivo mal empregado). Contudo, considero pouco científico que analistas do comportamento se contentem com a visibilidade do desconforto gerado por alguns procedimentos sem analisar de forma mais aprofundada qual é o tipo de controle que seria mais efetivo (na pesquisa) e/ou benéfico ao sujeito (na prática), não apenas na situação presente como também a médio e longo prazo.

*Por fim, a sua principal linha de pesquisa atual corresponde principalmente a estudos experimentais. No entanto, você se interessou, ao longo de sua carreira, pelo desenvolvimento de estudos de natureza teórico-conceitual. Como você*

*and what is your opinion about it?*

Experimental research and theoretical / conceptual / philosophical issues are interdependent, each influencing the other constantly. There is no way to work in the lab without being recurrently analyzing the philosophical issues that underlie our science. Likewise, the theoretical / conceptual issues are daily being put in check throughout the experimental research. The wonder of experimental research is precisely this: the data show us how nature happens; the theory is a verbal formulation of the logic of nature. If the experimental data contradict what would be expected by theory, one should review the theory; if a concept does not apply to certain situations that should be being embraced by it, the concept needs to be improved. Throughout my research career, I developed doubts about what is aversive control. After all, what defines this aversiveness? If we don't work with inferred processes, then the suffering or discomfort couldn't indeed be used as its defining elements (but we do it all the time); on the other hand, if behavior doesn't only involve operant relations, we also can't define aversiveness only in punishment processes, escape and avoidance. In the study about learned helplessness, for example, how do we define the shock as aversive which is independent of the behavior of the subject if there is no operating contingency existing? What I see is that, considering the gaps of the concepts, we act in a practical way: we extrapolate the function identified in the operant contingencies for conditions that don't involve contingency. And this posture coexists with our assertions that the "aversiveness" is a function and does not correspond to the nature of the stimulus. In practice it has worked, but we can't ignore that this attitude is inconsistent. This suggests to me the need to rethink the concept and to seek better ways to address this. So my scientific production involves, in addition to experimental studies, some tentative theoretical/conceptual rediscussion. The same happens with most experimental researchers in Brazil, who are playing an important role in conceptual, theoretical and philosophical debugging of Behavior Analysis. ■

*avalia a interação desses dois tipos de pesquisa no Brasil e qual sua opinião a respeito disso?*

A pesquisa experimental e a teórica/conceitual/filosófica são interdependentes, cada uma influenciando a outra constantemente. Não há como se trabalhar no laboratório sem estar recorrentemente analisando as questões filosóficas que fundamentam nossa ciência. Da mesma maneira, as questões teórico/conceituais estão diariamente sendo colocadas em xeque ao longo das pesquisas experimentais. A maravilha da pesquisa experimental é justamente essa: são os dados que nos mostram como a natureza acontece; a teoria é apenas uma formulação verbal sobre a lógica da natureza. Se os dados experimentais contradizem o que seria esperado pela teoria, deve-se rever a teoria; se um conceito não se aplica a determinadas situações que, supostamente, deveriam estar sendo abarcadas por ele, então o conceito precisa ser aprimorado. Ao longo da minha trajetória de pesquisa fui desenvolvendo dúvidas sobre o que é controle aversivo. Afinal, o que define essa aversividade? Se não trabalhamos com processos inferidos, então o sofrimento ou desconforto não poderiam, a rigor, ser utilizados como seus elementos definidores (mas fazemos isso o tempo todo); por outro lado, se o comportamento não envolve apenas relações operantes, também não podemos definir a aversividade apenas em processos de punição, fuga e esquiva. No estudo do desamparo aprendido, por exemplo, como definir como aversivo o choque que é independente do comportamento do sujeito se não existe nenhuma contingência operante em vigor? O que vejo é que, frente às lacunas dos conceitos, agimos de forma prática: extrapolamos a função identificada em contingências operantes para condições que não envolvem contingência. E isso convive com nossas afirmações de que a aversividade é função, e não natureza do estímulo. Na prática, tem dado certo, mas não podemos desconhecer que essa atitude é incoerente. Isso me sugere a necessidade de repensar o conceito e de buscar formas mais adequadas de tratar essa questão. Por isso minha produção científica envolve, além dos estudos experimentais, algumas tentativas de rediscussão teórico/conceitual. O mesmo vejo que ocorre com a maioria dos pesquisadores experimentais no Brasil, os quais estão tendo papel importante na depuração conceitual, teórica e filosófica da Análise do Comportamento. ■

**(English)**

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[bfskinner.org](http://bfskinner.org)

皆様のご理解、ご協力をお願い致します。

B. F. Skinner Foundation (B. F. スキナー財団)

B. F. スキナー財団は、501-C3の非

課税法人です。

**(Italian)**

Diventa nostro amico sostenitore

Ti saremo grati del tuo aiuto economico per supportare le attività della Fondazione. La tua donazione sarà utilizzata per intraprendere nuovi programmi di studio e implementare quelli già in corso.

Per maggiori informazioni visita il nostro website: [bfskinner.org](http://bfskinner.org)

Grazie per il sostegno che darai alla Fondazione.

**(Norwegian)**

Bli en venn

Ditt bidrag vil bli brukt til å støtte Stiftelsens aktiviteter. Vi setter stor pris på din hjelp for å etablere nye program og for å utvide pågående virksomhet.

Se vår web-side for mer informasjon: [bfskinner.org](http://bfskinner.org)  
Takk for din støtte til Stiftelsen.

**(Portuguese)**

Torne-se um amigo

Sua doação apóia atividades da Fundação, tal como o Prêmio de Pesquisa para Estudantes. Nós agradecemos a sua ajuda na criação de novos programas e na expansão do nosso trabalho atual.

Consulte nosso site para mais informações: [bfskinner.org](http://bfskinner.org).

Obrigada por apoiar a Fundação.

A Fundação B. F. Skinner é uma organização isenta de impostos.

**(Russian)**

Стань другом

Ваше благотворительное пожертвование будет использовано для поддержки деятельности Фонда. Мы ценим вашу помощь в создании новых программ и расширении нашей текущей активности.

Посетите наш сайт для получения дополнительной информации: [bfskinner.org](http://bfskinner.org)

Благодарим вас за поддержку Фонда.

Фонд Б. Ф. Скиннера является освобожденной от налогов организацией.

**(Spanish)**

Convírtase en un Amigo

Sus generosas donaciones se utilizarán para apoyar las actividades de la Fundación. Nosotros apreciaremos su ayuda para poder establecer nuevos programas y expandir los ya presentes.

Visite nuestra página para más información: [bfskinner.org](http://bfskinner.org).

Muchas gracias por apoyar la Fundación.

The fundacion B.F. Skinner Foundation es una organización exentos de impuestos 501-C3.



*As always, the editors welcome your feedback. Suggestions and news items are very welcome. Feel free to contact any of us by emailing [operants@bfskinner.org](mailto:operants@bfskinner.org).*

from the  
archives



When *Operants* correspondent Anna Luzi visited with prof. Paolo Moderato for an interview, he shared some photos from his personal archive. This picture was taken at Bad Kreuznach's Seminar in 1986.

We know who many of the participants are. We thought our readers could help us to identify as many people as possible. Please email [operants@bfskinner.org](mailto:operants@bfskinner.org) your memories (or guesses).



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