

Operants

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PROSPECTS OF THE SCIENCE THAT SKINNER STARTED: ARE WE ON THE RIGHT PATH?

Special Section:

Sports and the Science of Behavior





**from the
president**



Olympic contestants work hard to “go for the gold” and to beat their own individual bests. But what about animals? Horse racing asks for a horse’s maximum effort. Some horses don’t need much encouragement to stay out front. But even then, whips are frequently used. B. F. Skinner hated to see horses whipped. He once thought of a way to get horses to run their fastest. Races always produce cheering spectators. If trainers made the sound of cheering an evocative stimulus for running faster, the louder the cheering, the faster a horse would run. You could start by reinforcing running only when cheering occurred. Eventually you would require faster and faster galloping during cheering. Of course, some horses are born faster than others, so this would not guarantee a winner. But it could help any horse run its fastest without being whipped.

Julie S. Vargas, Ph.D.
President, B. F. Skinner Foundation

Arabic Translated by Deena Moustafa

يتنافس لاعبي الألبيناد من أجل الحصول على الميداليات الذهبية وكسر أرقامهم القياسية، لذا فهم يبذلون قصارى جهدهم لكن ماذا عن الحيوانات؟ الفارس في سباق الخيل يطلب من الحصان بذل أقصى جهده من أجل الجري بأقصى سرعة ممكنة، بعض الخيول قد لا تحتاج الكثير من التشجيع للبقاء في المقدمة، ومع ذلك فإن السياط تُستخدم من أجل تحفيزها في كثير من الأحيان. كان سكرتير يكره أن يرى الخيل تُجلد بالسياط، لذا فكر في وسيلة أخرى لجعل الخيول تجري بأسرع سرعة ممكنة، فهذا النوع من السباقات يولد أصوات عريضة من هتافات الجمهور، واستخدام تلك الهتافات قد يكون وسيلة فعالة، فعند استخدام المدربين لأصوات الهتاف كحافز للجري بأسرع ما يمكن، حيث تبدأ بتعزيز الجري فقط عند حدوث الهتاف، وكلما علا الهتاف، وجرى الحصان أسرع نقوم بتعزيزه، وبالتدريج يمكن أن تطلب من الحصان الركض أسرع في أسرع خلال الهتاف. بطبيعة الحال بعض الخيول تولد اسرع من غيرها، مما لا يضمن أن تكون لجميعها الفوز، ولكن هذه الطريقة بدون شك تساعد الخيول على الجري بشكل أسرع بدون جلدتها بالسوط.

Chinese Simplified Translated by Coco Yang Liu

أولمبيك选手们努力为了“金牌而进军”并且不断挑战自己个人的最高极限。那动物呢？赛马比赛中要求比赛的马尽全力，有的马并不需在比赛前要很多的鼓励也会努力往前面跑。即便是如此，鞭子在训练马的时候还是常常使用到。B.F.斯金纳不愿意看到马被鞭子打。他曾经想到一个可以让马出它们最快速度的方法。赛马总是会有观众的欢呼，如果驯马师在训练的时候做出欢呼让马跑的更快，欢呼声越大，马跑的就越快。开始的时候强化跑的时候，只有在有欢呼的时候才会有强化物。逐渐的，当越跑越快的时候才会强化。当然有的马天生比别的马跑的快，可是即使这样也不能确保冠军。但是这可以确保那跑的最快的马免受鞭打。

Chinese Traditional Translated by Kiwiya Zhang, Hui-Ting Wang, Po-Ying Tseng

奧運選手會為了衝擊金牌和超越自己而拼搏，動物會這樣做嗎？賽馬比賽需要馬用盡全力，有的馬不需要什麼外界鼓勵就能衝在前面，但是馴馬員還是常常會使用皮鞭去鞭策它們。B. F. Skinner非常不願意看到馬兒受到鞭打，他曾經思考該如何讓馬兒跑出最好的成績。賽馬場上總是有加油的觀眾，如果馴馬員能讓加油聲變成引發性的刺激，加油聲越大，馬兒就會跑的越快。最終在一片加油聲中，馬兒跑得越來越快。當然，有些馬天生跑的更快，所以這不能保證讓馬獲得冠軍，但至少能讓馬兒在不受鞭打的情況下跑出最快的成績。

Filipino Translated by Michael Abarca

Ang mga manlalahok ng Olympic ay nagsusumikap upang makamit ang ginto at mahigitan ang kanilang mga sarili. Ngunit paano naman sa mga hayop? Ang bawat karera ay kinakailangan ng sobra-sobrang pagsisikap ng mga kabayo. Ang ibang mga kabayo ay hindi nangangailangan ng gaanong panghihikayat upang sila ay manguna. Gayunpaman, ang mga ito ay madalas pa ring malatigo. Kinasusuklanan ni B.F. Skinner na makakita ng kabayong nilalatigo. Minsan siyang nakaisip ng paraan kung paano mapatatakbo ang mga kabayo ng napakabilis. Sa bawat karera ay laging may mga manonood na masayang nagsisigawan. Kung ang mga tagapagsanay ay ginawang evocative stimulus ang masayang sigawan upang tumakbo ng mabilis: mas malakas na sigawan, mas mabilis na pagtakbo ng mga kabayo. Maaaring umpisahan sa pamamagitan ng pagbibigay gantimpala lamang sa pagtakbo kapag may masayang sigawang naganap. Habang tumatagal ay kakailanganin na ng mas mabilis na pagtakbo kapag may masayang sigawang nagaganap. Siyempre, ang ibang mga kabayo ay likas na mas mabilis kaysa sa iba, kaya hindi ito garantiya ng pagkapanalo. Ngunit ito ay makatutulong sa kahit anong kabayo upang tumakbo ng mabilis ng hindi gumagamit ng latigo.

French Translated by MarieCeline Clemenceau

Les concurrents olympiques travaillent dur pour gagner la médaille d'or et battre leurs propres records. Mais qu'en est-il des animaux? Les courses de chevaux demande l'effort maximal du cheval. Certains chevaux ne nécessitent pas beaucoup plus d'encouragements pour rester à l'avant. Malgré tout, les coups de cravache sont fréquemment utilisés. B. F. Skinner détestait voir les chevaux être fouettés. Une fois il avait pensé à un moyen d'obtenir des chevaux qu'ils courent à leur vitesse maximale. Les courses produisent toujours les applaudissements des spectateurs. Si les entraîneurs faisaient du son des applaudissements un stimulus qui évoque "courir plus vite", alors plus les applaudissements seraient forts et plus vite le cheval courrait. On pourrait commencer par renforcer le fait de courir seulement quand les applaudissements ont lieu. Et finalement on exigerait un galop de plus en plus rapide au cours des applaudissements. Bien sûr, certains chevaux sont nés pour courir plus vite que d'autres, cela ne garantirait alors pas un gagnant. Mais cela pourrait aider tous les chevaux à courir à leur vitesse maximale sans avoir à être fouettés.

German Translated by Natalie Werner

Olympische Wettkämpfer arbeiten hart dafür Gold zu gewinnen und ihre eigene Bestleistung zu schlagen. Aber wie ist das bei Tieren? Pferderennen erfordern den größten Einsatz vom Pferd. Manche Pferde brauchen nicht viel Zuspruch um hervorstechen. Aber selbst dann, werden häufig Peitschen eingesetzt. B. F. Skinner hasste es zu sehen, wie Pferde ausgepeitscht werden. Er dachte einmal über Möglichkeiten nach, Pferde dazu zu bringen, so schnell wie möglich zu laufen. Rennen führen immer zu jubelnden Zuschauern. Wenn Trainer das Geräusch des Jubels zu einem auslösenden Stimulus für schnelles Laufen machen würden, wäre das Pferd umso schneller, je lauter der Jubel wäre. Man könnte damit beginnen, Laufen nur noch zu verstärken, wenn Jubel auftritt. Schließlich würde es schnelleres und schnelleres Galoppieren während des Jubels erfordern. Natürlich werden einige Pferde schneller geboren als anderen, dieses Vorgehen würde also keinen Gewinner garantieren. Aber es würde dem Pferd dabei helfen so schnell wie möglich zu laufen, ohne gepeitscht zu werden.

Greek Translated by Katerina Dounavi

Οι αθλητές των Ολυμπιακών Αγώνων εργάζονται σκληρά για να “πάνε για το χρυσό” και να νικήσουν τα δικά τους ατομικά ρεκόρ. Αλλά τι γίνεται με τα ζώα; Οι ιπποδρομίες απαιτούν τη μέγιστη δυνατή προσπάθεια ενός αλόγου. Μερικά άλογα δε χρειάζονται πολλή ενθάρρυνση για να βγουν πρώτα. Αλλά ακόμα και τότε, τα μαστίγια χρησιμοποιούνται συχνά. Ο B. F. Skinner μισούσε να βλέπει να μαστιγώνουν τα άλογα. Κάποτε σκέφτηκε έναν τρόπο για να κάνει τα άλογα να τρέχουν όσο γρηγορότερα μπορούν. Οι αγώνες πάντα κάνουν τους θεατές να ζητωκραυγάζουν. Αν οι εκπαιδευτές έκαναν τον ήχο των ζητωκραυγασμών ερέθισμα που να προξενεί γρηγορότερο τρέξιμο, όσο πιο δυνατοί οι ζητωκραυγασμοί, τόσο γρηγορότερα θα έτρεχαν τα άλογα. Θα μπορούσες να αρχίσεις ενισχύοντας το τρέξιμο μόνο όταν υπήρχαν ζητωκραυγασμοί. Τελικά θα απαιτούσες όλο και πιο γρήγορο καλπασμό κατά τη διάρκεια των ζητωκραυγασμών. Φυσικά, κάποια άλογα γεννιούνται γρηγορότερα από άλλα, έτσι αυτό δε θα μπορούσε να εγγραφεί τον νικητή. Αλλά θα μπορούσε να βοηθήσει οποιοδήποτε άλογο να τρέξει όσο ταχύτερα μπορεί χωρίς να μαστιγωθεί.

Hebrew Translated by Shiri Ayzano

מתחרים אולימפיים עובדים קשה כדי "להרויח את הזהב" וכדי לשבור את השיאים האישיים שלהם. אך מה בנוגע לחיות? מירוצי סוסים דורשים מהסוס מאמץ מירבי. ישנם סוסים שלא צריכים הרבה עידוד כדי להיות המובילים במרוץ. אך גם אז, נעשה שימוש תכוף בהצלפות שוט. ב. פ. סקינר שנא לצפות בסוסים מולקים. פעם הוא חשב על דרך לגרום לסוסים לרוץ הכי מהר שיכלו. מירוצים תמיד מייצרים קהל מעודד. אם מאמנים היו מכוונים את קול העידוד כגירוי מעורר לריצה מהירה יותר, אז ככל שהקול היה רועש יותר, כך הסוס היה רץ מהר יותר. אפשר להתחיל על ידי חיזוק ריצה רק כאשר קולות העידוד נשמעים. בסופו של דבר, נדרוש דהרות מהירות יותר ויותר בנוכחות קולות עידוד. כמובן, חלק מן הסוסים נולדים מהירים יותר מאחרים, ולכן זה לא יבטיח בהכרח מנצח. אך זה יכול לסייע לכל סוס לרוץ במהירות הרבה ביותר מבלי להיות מולקה.

Italian Translated by Anna Luzi

Gli atleti olimpionici si allenano duramente per vincere la medaglia d'oro e battere i loro record personali. E gli animali? Le corse di cavalli richiedono il massimo sforzo e, anche se alcuni cavalli non hanno bisogno di molto incitamento per dare il massimo, vengono ugualmente frustati. B.F. Skinner non sopportava di veder frustare i cavalli ed una volta pensò a come farli correre alla massima velocità. Le corse hanno sempre un pubblico di tifosi festanti e se gli allenatori fossero stati in grado di rendere gli incitamenti dei tifosi uno stimolo evocativo per correre più velocemente, allora più forte fosse stato il suono, maggiore sarebbe stata la velocità dei cavalli. Per cominciare si sarebbe potuto rinforzare lo slancio della corsa precisamente nel momento in cui fossero presenti i picchi di incitamento, per poi richiedere un galoppo sempre più veloce in corrispondenza dell'aumento dei suoni. Naturalmente alcuni cavalli nascono più veloci di altri e quindi questa procedura non può assicurare da sola una vittoria, ma potrebbe aiutare ogni cavallo a correre al massimo della sua velocità senza essere frustato.

Japanese Translated by Naoki Yamagishi

オリンピックの選手は、まさに金メダルを目指して、そして自己ベストを超えるために頑張っています。しかし動物についてはどうでしょうか？競馬は馬の最大限の努力を必要とします。ある馬は先頭を走り続けるのにそれほど激励を必要としません。しかしそれでも頻繁に鞭が使用されます。B. F. Skinnerは馬が鞭で叩かれるのが嫌いでした。かつて彼は馬が全力で走るための方法を考えたことがありました。競馬では観客の声援があります。もし調教師が、声援をより速く走ることを喚起させる刺激にすることができれば、馬はより速く走るようになるでしょう。まず、声援があるときだけ走るのを強化するところから始めます。最終的には声援の間、より速く疾駆することを要求することになります。もちろんある馬は生まれつき他の馬より脚が速いので、これは勝利を保証するものではありません。しかしこの方法によって、鞭打たれずに馬が全力で走るのを手助けすることができるかもしれません。

Norwegian Translated by Karoline Helgesen

Deltakere i olympiske leker jobber hardt for å “gå for gull” og slå sine egne beste resultater. Men hva med dyrene? I veddeløp for hester ber man om hestens ytterste anstrengelse. Noen hester trenger ikke mye oppmuntring for å ligge i tet. Men selv da brukes pisk regelmessig. B. F. Skinner hatet å se hester bli pisket. Han tenkte en gang ut en måte å få hester til å løpe så fort de kunne. Veddeløp produserer alltid heiende tilskuere. Om trenere etablerte lyden av heiende tilskuere som en diskriminativ stimulus for å løpe fortere, ville hesten løpt fortere desto høyere det ble heiet. Du kunne startet med å forsterke løping bare når det ble heiet. Etter hvert ville du ha forventet raskere og raskere galoppering mens det ble heiet. Nå er selvfølgelig noen hester født raskere enn andre, så dette ville ikke garantere en vinner. Men det kunne hjelpe enhver hest til å løpe sitt raskeste uten å bli pisket.

Portuguese Translated by Rafael Picanço

competidores olímpicos trabalham duro para “chegar ao ouro” e bater suas melhores marcas individuais. Mas o que dizer sobre os bichos? Corridas de cavalo requerem esforço máximo de um cavalo. Alguns cavalos não precisam de muito alento para ficar na frente. Mas, mesmo assim, chicotes são frequentemente usados. B. F. Skinner odiava ver cavalos sendo chicoteados. Ele uma vez pensou sobre um jeito de fazer cavalos correrem o máximo que podiam. Corridas sempre produzem espectadores animados. Se os treinadores fazem o som da torcida um estímulo evocativo de correr mais rápido, quanto mais alta a torcida, mais rápido o cavalo correria. Você poderia começar reforçando a corrida apenas quando uma torcida comesse. Eventualmente você exigiria um galopar cada vez mais e mais rápido durante a torcida. Lógico, alguns cavalos nascem mais rápidos do que outros, então isso não garantiria um vencedor. Mas isso poderia ajudar qualquer cavalo a correr o seu mais rápido tempo sem ser chicoteado.

Polish Translated by Monika Suchowierska-Stephany

Zawodnicy olimpijscy ciężko pracują, aby "sięgnąć po złoto" i pobić swoje własne rekordy. A jak sytuacja wygląda ze zwierzętami? W czasie wyścigów konnych, oczekuje się, że koń da z siebie maksimum wysiłku. Niektóre konie nie potrzebują silnego pobudzenia przez jeźdźcę, aby dążyć do przodowania. Ale nawet w ich przypadku, często używa się bata. B. F. Skinner był przeciwnikiem bicia koni podczas wyścigów. Zastanawiał się, co można zrobić, aby konie biegły jak najszybciej. Wyścigom zawsze towarzyszą owacje publiczności. Jeśli trenerzy zadbaliby o to, żeby okrzyki dopingu były bodźcem motywującym konia do szybszego biegu, to im głośniejsze i większe wiwaty, tym szybciej biegłby koń. Można by zacząć od wzmacniania biegu tylko wtedy, gdy owacje mają miejsce. W miarę upływu czasu, powinno się wzmacniać coraz szybszy bieg w czasie dopingu widzów. Oczywiście, niektóre konie rodzą się z predyspozycjami do szybszego biegu, a inne - nie, zatem wspomniana strategia nie gwarantuje zwycięstwa. Niemniej jednak, może spowodować, że każdy koń będzie zmotywowany do większej pracy bez konieczności stosowania wobec niego bata.

Russian Translated by Alexander Fedorov

Участники Олимпийских игр тренируются изо всех сил «ради золота» и ради того, чтобы превзойти собственные достижения. А животные? Скачки требуют от лошадей максимальных усилий. И некоторые лошади не нуждаются в особых стимулах, чтобы скакать впереди всех. Но даже в этом случае нередко пользуются хлыстом. Б.Ф. Скиннер терпеть не мог видеть, как хлещут лошадей. И однажды он придумал, как заставить лошадей бежать изо всех сил. На скачках всегда присутствуют зрители, которые подбадривают участников восклицаниями и свистом. Если тренеры сделают эти звуки стимулом, побуждающим бежать быстрее, то чем громче они будут, тем быстрее будет лошадь бежать. Можно начать с того, чтобы подкреплять бег только в том случае, когда слышны эти звуки подбадривания. Постепенно ты требуешь все более быстрого галопа во время этих звуков. Безусловно, некоторые лошади по своей природе быстрее других, поэтому эта методика не гарантирует победы. Но она может помочь любой лошади бежать быстрее без применения хлыста.

Spanish Translated by Gonzalo Fernández, Kenneth Madrigal

Los atletas olímpicos trabajan duro para "conseguir el oro" y para romper sus mejores marcas individuales. ¿Acaso sucede lo mismo con los animales? Por ejemplo, las carreras de caballos exigen el mejor esfuerzo del animal, algunos ni siquiera necesitan de mucho entrenamiento para participar en ellas; sin embargo, frecuentemente se hace uso de látigos. B.F. Skinner odiaba ver a los caballos siendo azotados. En alguna ocasión él pensó en una manera de hacer que los caballos corrieran a su máximo. Identificó que durante las carreras los espectadores siempre producen aplausos; por lo cual, si los entrenadores hicieran del sonido de los aplausos un estímulo evocador para correr más rápido, entre más ruidosos los aplausos, más rápido correría el caballo. Se podría comenzar por reforzar al caballo solo cuando ocurriera el aplauso, requiriendo eventualmente un galope más y más rápido durante los aplausos. Por supuesto, algunos caballos nacen más rápidos que otros, así que esto no podría garantizarnos a un ganador; sin embargo, sí podría ayudar a cualquier caballo a correr al máximo sin ser azotado.

Swedish Translated by Dag Strömberg


Olympiska tävlande jobbar hårt för att "sikta mot guld" och för att slå sina personbästa. Men hur är det med djur? Kapplöpning kräver en hästs maximala ansträngning. Vissa hästar behöver inte mycket uppmuntran för att hålla sig framme. Men ändå blir piskan ofta använd. B.F. Skinner avskydde att se hästar piskas. En gång tänkte han ut ett sätt att få hästar att springa så snabbt de kan. Lopp ger alltid hejande åskådare. Om tränare gjorde ljudet av hejarop till ett evokativt stimulus för att springa snabbare skulle en häst springa snabbare ju högre hejaropen skullade. Man skulle kunna börja med att förstärka springande bara när hejande pågick. Så småningom skulle man kräva snabbare och snabbare galopp vid hejande. Vissa hästar är förstås födda snabbare än andra, så detta skulle inte garantera en vinst. Men det skulle kunna hjälpa vilken häst som helst att springa så snabbt den kan utan att bli piskad.

Turkish Translated by Hande Cihan

Olimpiyat yarışçıları rakiplerini yenmek ve altın madalya kazanmak için sıkı çalışırlar. Peki ya hayvanlar? Bir atın maksimum çabasını isteyen at yarışları. İşte o zamanlarda, kırbaçlar kullanılmaya başlanır. B. F. Skinner atların kırbaçlandığını görmekten nefret ederdi. Bir seferinde atların en hızlı koşabilmelerini sağlayacak yolu öğretmişti. Yarışlarda her zaman tezahurat eden seyirciler olur. Eğiticiler tezahuratı atların hızlı koşmaları için ön uyarı olarak kullandıklarında, ne kadar çok tezahurat yapılırsa atlar o kadar hızlı koşacaktır. İşe koşma davranışını tezahurat başladığında pekiştirerek başlayabilirsiniz. Nihayetinde atlar tezahurat sırasında dört nala koşacaklar. Elbette bazı atlar doğuştan diğerlerine göre daha hızlı koşarlar, bu yüzden bu yöntem bir şampiyonluk garantisi etmez. Ancak bir atın kırbaçlanmadan olabildiğince hızlı koşmasına yardımcı olabilir.



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Our Prospects as a Science



Ernest A. Vargas, PhD
Cambridge, MA

Tête-à-tête. What prospects come into view for the independent science of “behaviorology?” In talking about our prospects as a science, I must address our conduct as a science community. I must also discuss the cultural context in which that conduct occurs. And I must talk about that conduct in conventional terms as if people willfully dictated their actions and beliefs. Like “selfish genes” and “a sun that rises,” a convenient shorthand persists as necessary for easy exposition. But despite the metaphorical overtones, it is our actions and their contingencies, explicit and implied, to which I will point. I first address our cultural context and then our conduct.

Cultural Context. We daily encounter the problem of our fracture from the common culture’s overwhelming belief — that an inner agency determines behavior. Most individuals, groups, and institutions find it difficult to give up the mini-god in the biochemical, contingency-governed, feedback-systems “locus.” Most do not give it up; that includes other science disciplines such as economics, political science, and sociology, and other institutions such as government, law, and religion. The man in the street and the academic in the classroom and the professional in the office all resist and resent any science that disputes the creator within.

Anti-scientific sentiment does not automatically result from the presumed “Frankensteinian” technologies that ensue from scientific knowledge. Few who argue of the fearful dangers of scientific technology would surrender their thermostats, their refrigerators, and their computers and certainly not their dreams of rockets to the moon. What Frankenstein’s creature implies is a technology run amok due to an uncurbed science. But more than that: It implies a science that threatens our assumptions about our selves and our justifications of our sovereignty. Frankenstein’s creature was not a new tool. His creature was a creature without a soul. And a soul sets “sapiens” above other animals. What is feared is a science that produces a world where homo sapiens is merely a part of it, no longer exempt from nature’s general laws and thus no longer justified in dominion over the beasts of the field, the fishes of the sea, and the birds of the air and most importantly not even dominion, justified by presumed attributes, over other sapiens. Gone is the hero and sinner within. Gone, therefore, are all the rationales for the rules of the establishments based on the actions of that inner decider. No more actions freely willed, actions deliberately intended, actions solely prescribed, by our pumped-up homunculus.

Revolutions in scientific thinking do not occur without others noting their features and considering their implications. Most of what they note, they dislike. Much of what they consider, they reject. These observations are easily exemplified by Darwin’s theory whose implications are intuitively obvious. But even in esoteric scientific work such as that of Einstein’s on relativity theory in physics, objections are raised when what is proposed is too far from the beaten path. I. Bernard Cohen in *Revolution in Science* provides a quote that epitomizes this reaction nicely,

To many ... [Einstein’s theory of relativity] seemed to be nothing more than a manifestation in science of the same kind of destructive or anarchic bolshevism that ... seemed to be threatening all the accepted values of Western civilization and society. The staid New York Times (16 Nov. 1919, p. 8) printed an article entitled ‘Jazz in Scientific World,’ beginning with four questions: ‘When is space curved? When do parallel lines meet? When is a circle not a circle? When are the three angles of a triangle not equal to two right angles?’ The answer: ‘Why, when Bolshevism enters the world of science of course.’



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If this is the reception to a revolutionary scientific theory whose mathematics could hardly be grasped, we can expect an even fussier reception to the behaviorological position that the causal self you feel so directly is simply an illusion—like the vista of a flat earth.

It is tough to leave that belief in a personal agency. It was a struggle in physics. We are familiar with early animistic explanations of physical phenomena — Dionysus, and Boreas, and Neptune, and Apollo driving his sun chariot across the sky. In the appeal of magic shows and science fantasy novels, the animism aroma lingers like yesterday's meal in a kitchen. But in the transition from Aristotle to Galileo, physics left the last vestiges of animism by discarding teleological explanations. Several centuries later, the exclusion of agency in the great chain of life finally occurred in biology. Darwin's magnificent contribution was not only to lay a data-based case for evolution but more profoundly, to give a means by which it occurred — natural selection. The latter was so hard to swallow that even people who supported Darwin fervently, for example, Thomas Huxley, had their doubts. Natural selection made irrelevant an agency responsible for the forms and functions of species. No longer was there an agency leaving fossils to pique our curiosity and to plague us with mystery. Nevertheless, the struggle over the concept of agency is not over in biology. Noisy battles are fought over creationism in high school curricula. Such sound and fury continue despite more than a hundred years of work in genetics and systematics describing how the structures and functions of organisms result from genetic-environmental interaction, and despite the current mapping of the human genome and despite the selling of genetically-engineered tomatoes at the grocery store. Now the din resounds in the final battleground: the exclusion of agency from the analysis and explanation of the behavior of organisms.

Far more than Loeb, for whom volition reduced itself to physiology and physics, Skinner showed how an agency-less analysis could be conducted within a science of behavior. Analogous to Galileo analyzing not the balls themselves but the properties of balls rolling down inclined planes, Skinner was not analyzing organisms as such but the properties of behavior correlated to selectional contingencies. But Skinner erred at the beginnings of our science. He tried to establish a science community that excluded an animistic agency in the middle of another science community in which such an agency comprised its centerpiece. He realized the magnitude of the problem. He stated early on that he would have a science of behavior to suit himself even if he had to make over psychology. Unfortunately, he did try to make over psychology. We observe the results. The Skinnerian revolution never did happen in psychology — and never will.

Despite 80 years of evidence to the contrary, some people still believe they can carry off a Skinnerian revolution from within an established discipline that still celebrates the inner agency and its "mind." Failure is blamed on lack of diplomacy or insufficient humbleness. Some even blame Skinner of inadequate *convenient* compromise with the same sort of circular logic that would blame Galileo for insufficient humbleness to the conservative curia or Darwin for a lazy diplomacy with the Bishop Wilberforces of his day. But the attempt to accommodate those who believe in animistic

agencies and their surrogates and the failure of such accommodation are well documented in articles such as that of Fred Keller's "A Fire in Schermerhorn Extension." As Keller stated, "Psychology, by and large, was slow to look upon the Box [Skinner's experimental chamber by which to examine contingency relations] with favor, and I doubt that it will ever really do so." Skinnerians then and behaviorologists now do not engage in scientific effort in order to offend. The problem is not that we are offensive. Our scientific beliefs are. Our beliefs and their attendant practices make us unwelcomed in mind-belief communities in the same sense that whatever personal charms Salman Rushdie may have, he'd hardly be picked to lead the muslims to Mecca.

Community Conduct. But how should we conduct ourselves? In avoiding the mistake of not establishing an independent science community, we must not stumble into another fault. We must not wait for someone, garbed in a white coat and astride on a large grant, to come galloping along and present us with our science fully-packaged. Our science is a collective enterprise. And each individual is a locus of actions that contributes to our enterprise and that continues our scientific tradition. We maintain a scientific tradition by engaging in it. We promote its future by our current actions. We facilitate its success by our efforts—experimental, conceptual, and applied. Every designated function between independent events and dependent behavioral properties anchors our principles. Every conceptual clarification fortifies our fundamental frame of reference. Every successful shaping of a child's repertoire certifies the validity of our scientific foundations.

The totality of these actions denotes our science community, one in which the subtle interplay of beliefs and events provide the contingencies that shape our community of effort. By shaping our own science community, we shape our science. The phrase "our own science community" denotes a unique science community, and a unique science community occurs only through idiosyncratic contingency controls. As with prior radical movements that have succeeded in maintaining their integrity in an ambient antagonistic culture, we best shape our science community by isolating ourselves from the contingency controls of those who promote the conventional wisdom. We deliberately build our own gilded ghetto. That does not mean that we are not open to other sciences from physiology to physics. It means that we do not default our principles and their validity to another science's approval, for example thinking that neuronal action is more substantial than operant action.

We do not need anyone else's approval to pursue our means of discovery and to label any discovery according to our own concerns. When under control of our subject matter, each one of us is a majority of one. Some philosophers of science assert that we construct reality, including the subject matter of our science, and that only with the approval of others. But physicists do not gather yearly at the Astrodome and vote on Newton's laws, and if 51 percent approve, then gravity — or any other aspect of the physical world — operates for another year. In the science of behavior, what counts when working with behavioral phenomena is whether the discoveries we share lead to more effectiveness for ourselves and others—to accurate prediction and to successful control. As

Mach pointed out some time back, science is the immensely practical way of dealing with our immediate world.

We also do not need, in the sense of require, a large community. Do prediction and control have anything to do with size of community? Of course not. We must not lose sight of what is significant by clouding our vision by the miasma of what counts as success in American culture, envisaging that only if we get bigger are we better. Even business tries to avoid that mistake. It keeps sight of the fact that the size of a company may matter, but that profit matters more. It is the contingencies over the actions of a community that provide substance to a science, not the body count of an organization. It is the number and quality of science products that denote our vitality, not the size and noise of a yearly convention. It is the extent to which everyone in a science community participates that makes it a community, not just a few “biggies.”

Even worse than the dominance of a few biggies are the passive spectators that make up large science organizations. Spectators sit in the stands and signal “thumbs up for this theory,” “thumbs down for that one.” But science is not a spectator sport. At least, it should not be for people who deem themselves scientists. Ask yourself: if you are interested in being a behaviorologist (as against just having an interest in behaviorology), what have you done to contribute to the science? There are many actions you can take. Writing an article. Helping a client. Running an experiment. From recognizable names—Einstein to Feynman—can one be a physicist and never explore physical phenomena? Be an ethologist and never trample in the woods? Be an astronomer and never stare at the stars? Our works define our priorities. They also define us.

A contribution does not mean getting involved in the direct conduct of experiments. It does not demand that one don a white coat and dash into the nearest laboratory. Though posed by some, experimentation is not as the *sine qua non* of science. Jane Goodall contributed to much of what we know of chimpanzee behavior through observational work. Albert Einstein did his part for physics through theory. Ronald Fisher developed the analysis of variance from his work with agricultural data already available. Astronomers rarely manipulate their subject matter. Paleontologists never observe theirs at least in current action, only what it left behind. We contribute in a variety of ways to our science community. As many science methodologies occur as there are ways of coming under control of a subject matter.

Behaving as a scientist though does not distinguish our science actions as those of behaviorologists, for scientific ways as such are also those of other science communities. It is when we apply a shared and common framework of explanation that we behave as scientists of a distinct science community. Any particular one of the domains of the sciences — the physical, the biological, and the behavioral — share the same data base. It is how those data bases are interpreted that matters. A physicist as a physicist looks for an explanation of molecular phenomena within the framework of quantum mechanics. A biologist as a biologist looks for an explanation of changes in species within an evolutionary framework. A behaviorologist as a behaviorologist analyzes actions with a contingency-based explanation. Frames of reference define


science communities.

Such behavior in common establishes a collective identity. A collective identity makes up the critical factor in what constitutes a science community. There were physicists before departments of physics and biologists before departments of biology and behavior analysts before departments of behavior analysis; and there were scientists before the term “scientist,” a nineteenth century neologism coined by William Whewell. Such a collective identity not only ensues from a common way of thinking but from a common commitment to each other. As important as the efforts we make in our science are, the obligations we incur with each other through a shared responsibility in what someone else may achieve take an equal importance. We seem to be making this effort. But though I think we (at least most of us) look for community, we overlook the effort that is involved. We hear, or know, of the great communities of the Golden Age of Greece but not so much of what it took to form and maintain them. Take, for example, this statement by Bernard Knox.

Athens ... expected military service (combat service, not chairborne) for its frequent wars. Men were liable for campaigns beyond the frontiers up to the age of 50 and might be called upon to defend the city walls until they were 60. [I]ts wealthy citizens were subject to special levies as well as 'liturgies'—public service that could range from the financial responsibility for a dramatic performance to equipment of a warship. 'We alone,' said Pericles, 'regard the man who holds aloof from the city's business not as "quiet" but as useless.'

If we want a community, then we must be gratified more by what we contribute to others than by what we take from them.

Of particular importance is giving to the younger members of our community. We need to give our younger professionals more encouragement and advice and support. The effects of such efforts will show themselves in their articles in science journals and their papers at conventions and their successes with clients. With greater guidance and personal help, our younger professionals will learn how to share more frequently what they encounter and discover. They handle important and responsible jobs for us and for others, yet we rarely hear from them. Something is amiss in the contingencies. It is not just a matter of age. Youth is not a factor nor a hindrance in what can be contributed. Alexander the Great was a teenager when he took over his father's armies and began the conquest of his immediate world. Behaviorology's future lies in those yet to be that future — our students and newly-emerging professionals. And they will need all the help we can give them for establishing and maintaining a new discipline is no easy trot.

Envoi. Fred Skinner said sometime back, “You will not be surprised, then, to find me commending to you the steep and thorny path to that heaven promised by a science of behavior.” That such a path is still steep and thorny continues to be true as any casual glance will reveal. That path is not for the closet mystics, the status seekers, and the timid hearts. But if through a community of effort we each pull with a helping hand, the path tilts less steeply, and the thorns scratch less sharply. 



profile

Dr. Carlos Bruner: I Am Optimistic About the Future of My Students



**Interview and English Translation
by Gonzalo Fernandez and Kenneth Madrigal**

Dr. Carlos Bruner received his PhD from Queens College, City University of New York under the guidance of doctors Tom Verhave, Brett Cole, and William N. Schoenfeld. Currently, he is a full professor at the School of Psychology of the National University of Mexico (UNAM). There, he founded the Operant Conditioning Laboratory where he has conducted basic research in operant conditioning.

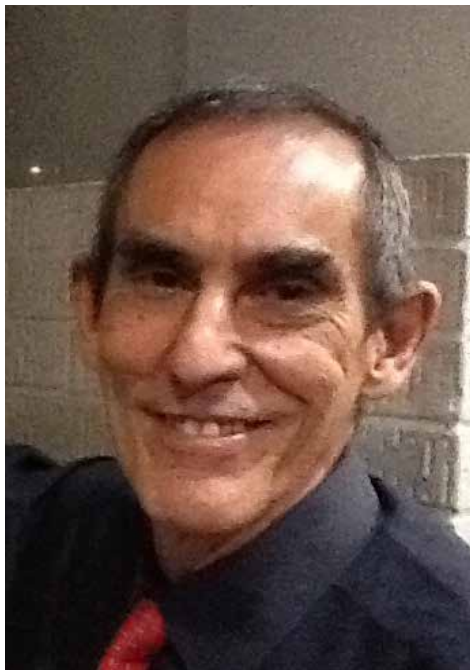
Dr. Bruner's work has been widely acknowledged at UNAM. He was recognized as a founding member of the School of Psychology and awarded with the highest ranking among academic personnel, Level D of the Rewards Program for Academic Performance. Outside UNAM, the Association for Behavior Analysis International inducted him as a Fellow Member. The prestigious National Research System recognized his uninterrupted membership to the system and awarded him with the highest level III category. The Mexican Society for Behavior Analysis granted him the National Award for Research in Behavior Analysis.

He has published extensively on diverse topics in behavior analysis, including the demonstration that schedule-induced drinking by rats reduces to a case of operant conditioning, that response acquisition occurs with infrequent and delayed reinforcement, and recently that reinforcement magnitude is a powerful determinant of the effects of delay of reinforcement. His articles have been cited frequently in prestigious national and international journals and book chapters.

Dr. Bruner has contributed substantially to the development of behavior analysis in Mexico. He served twice as president of the Mexican Society of Behavior Analysis and also as editor of the Mexican Journal of Behavior Analysis. In addition, he has trained numerous students, both undergraduate and graduate. Presently, most of his former doctoral students work as professors and researchers in universities around the country and belong to the National Research System.

Outside Mexico, Dr. Bruner has also contributed to the dissemination of behavior analysis around the world as invited lecturer and keynote speaker in many international events. In addition, he has presented research papers and posters in numerous international conventions as coauthor with his students and colleagues.

Dr. Bruner has served in many evaluation committees, including the Ethics Committee of the Mexican Society of Psy-



**Carlos Bruner, PhD
National University of Mexico**

El Dr. Carlos Bruner obtuvo su doctorado en el Queens College de la Universidad de la Ciudad de Nueva York, bajo la tutoría de los doctores Tom Verhave, Brett Cole y William N. Schoenfeld. Actualmente es profesor de tiempo completo en la Facultad de Psicología de la Universidad Nacional Autónoma de México (UNAM). Ahí fundó el Laboratorio de Condicionamiento Operante donde ha conducido principalmente investigación básica en condicionamiento operante.

El trabajo del Dr. Bruner ha sido ampliamente reconocido por la UNAM. Fue reconocido como miembro fundador de la Facultad de Psicología y le fue otorgado el nivel más alto, nivel D del Programa de Estímulos a la Productividad Académica (PRIDE). Fuera de la UNAM, la Association for Behavior Analysis International lo indujo como miembro Fellow. El prestigioso Sistema Nacional de Investigadores lo reconoció por su membresía ininterrumpida y le otorgó el nivel más alto, la categoría III. La Sociedad Mexicana de Análisis de la Conducta le otorgó el Premio Nacional de Investigación en Análisis de la Conducta.

Ha publicado extensamente sobre diversos tópicos del análisis de la conducta, incluyendo la demostración de que el beber inducido por el programa de reforzamiento en ratas se reduce a un caso de conducta operante, que la adquisición de la respuesta ocurre con reforzamiento infrecuente y demorado y recientemente que la magnitud de reforzamiento es un determinante poderoso de los efectos de la demora de reforzamiento. Sus artículos han sido citados frecuentemente en revistas prestigiosas nacionales e internacionales y en capítulos de libro.

El Dr. Bruner ha contribuido sustancialmente al desarrollo del análisis de la conducta en México. Fue Presidente de la Sociedad Mexicana de Psicología en dos ocasiones y también fue editor de la Revista Mexicana de Análisis de la Conducta. Además, ha formado a numerosos estudiantes, tanto graduados como no graduados. Actualmente la mayoría de sus antiguos estudiantes de doctorado trabajan como profesores e investigadores en distintas universidades de prestigio alrededor del país y pertenecen al Sistema Nacional de Investigadores.

El Dr. Bruner también ha contribuido a la disseminación del análisis de la conducta alrededor del mundo como conferencista magistral e invitado en muchos eventos internacionales. Además, en coautoría con sus estudiantes y colegas ha presentado numerosas ponencias y posters de trabajos de investigación en múltiples congresos y eventos académicos.

chology, the Committee for the Evaluation of UNAM's Graduate Programs, and recently the Fellows Committee of the Association for Behavior Analysis International. He has also served as jury for different awards, the most important of which are the National University Award and the National Award for Arts and Sciences.

He has been a member of editorial boards in many psychological journals: *The Mexican Journal of Behavior Analysis*, *The Mexican Journal of Psychology*, *The Iberoamerican Journal of Psychology*, *Suma Psicológica* (Colombia), *The Behavior Analyst* (U.S.A.), *Journal of Experimental Analysis of Behavior* (U.S.A.), *International Journal of Psychology* (Canada), *Latinamerican Journal of Psychology* (Colombia), *Acta Comportamentalia*, and *Psychological Research Records*.

He has also been a member of different psychological associations: the Mexican Society of Behavior Analysis, the Mexican Society of Psychology, the Mexican Society of Social Psychology, the Interamerican Society of Psychology, the Association for Behavior Analysis International, the Mexican Academy of Sciences, and the Mexican Research System in Psychology.

How did you get into the field of behavior analysis?

Back in the 60s, psychology was taught at the National University of Mexico within the School of Philosophy with a strong orientation towards psychoanalysis. When I casually read about behaviorism, I liked it mainly because it characterized psychology as a natural science. During my Master's studies at the University of Veracruz, the teachings of Emilio Ribes and of other American professors broadened my knowledge about the experimental analysis of behavior. Andree Fleming, a professor of the program, suggested that I should pursue doctoral studies and gave me a letter of recommendation for Thom Verhave at Queens College of City University of New York. Once accepted into the program, my career as a behaviorist started in earnest.

How has behaviorism impacted your career?

I've had a very satisfying long career (over 40 years) ever since I found my vocation as a behaviorist. Apart from laboratory research, I have always focused the subject matter of psychology from the point of view of behaviorism.

What is the present position of behavior analysts toward cognitive science, and what are the critical points still addressed to it?

It seems to me that many former behaviorists have converted to cognitive mentalism, reaching the point of having many of their publications accepted in *JEAB* and *TBA* (thus I have considered canceling my subscription to *JEAB* and membership to *ABAI*). My reading is that many new converts to cognition never really understood the philosophy of our science. I cannot understand the ease with which one can shift from environmental to inner determination of behavior.

There seems to be a growing upsurge of a "cognitive-behavioral approach." The layman (i.e., non-behaviorists) may overlook the conflicting fields. What is your position toward cognitive science, and what are the critical points still addressed to it?

Cognitive psychologists can "cognitate" all they

El Dr. Bruner ha participado en numerosos comités de evaluación, incluyendo el Comité de Ética de la Sociedad Mexicana de Psicología, el Comité de Evaluación de los Programas de Posgrado de la UNAM y recientemente en el Comité para la selección de Fellows de la Association for Behavior Analysis International. También ha participado como jurado de diferentes premios, los más importantes de los cuales son el Premio Universidad Nacional y el Premio de Ciencias y Artes.

Ha sido miembro de comités editoriales de muchas revistas psicológicas: *Revista Mexicana de Análisis de la Conducta*, *Revista Mexicana de Psicología*, *Revista Iberoamericana de Psicología*, *Suma Psicológica* (Colombia), *The Behavior Analyst* (E.U.), *Journal of the Experimental Analysis of Behavior* (E.U.), *International Journal of Psychology* (Canadá), *Revista Interamericana de Psicología* (Colombia), *Acta Comportamentalia* y *Acta de Investigación Psicológica*.

También ha sido miembro de diferentes sociedades científicas: *Sociedad Mexicana de Análisis de la Conducta*, *Sociedad Mexicana de Psicología*, *Asociación Mexicana de Psicología Social*, *Sociedad Interamericana de Psicología*, *Association for Behavior Analysis International*, *Academia Mexicana de Ciencias* y el *Sistema de Investigación en Psicología*.

¿Cómo llegó al campo del Análisis de la Conducta?

En los 60's la psicología se enseñaba en la Facultad de Filosofía y Letras de la Universidad Nacional Autónoma de México, con una fuerte orientación hacia el psicoanálisis. Cuando casualmente leí sobre conductismo, éste me gustó principalmente porque caracterizaba a la psicología como una ciencia natural. Durante mis estudios de maestría en la Universidad de Veracruz, las enseñanzas de Emilio Ribes y de diversos profesores americanos ampliaron mi conocimiento sobre el análisis experimental de la conducta. Andree Fleming, una profesora del programa, sugirió que debía perseguir estudios doctorales y me dio una carta de recomendación dirigida a Thom Verhave del Queens College de la Universidad de la Ciudad de Nueva York. Una vez que fui aceptado en el programa, mi carrera como conductista comenzó en serio.

¿Cómo ha impactado el conductismo su carrera?

He tenido una larga y satisfactoria carrera (por más de 40 años) desde que encontré mi vocación como conductista. Aparte de la investigación del laboratorio, siempre he enfocado la materia de estudio de la psicología desde el punto de vista del conductismo.

¿Cuál es la posición actual de los analistas conductuales hacia la ciencia cognitiva y cuáles son las críticas que aún se le hacen a ésta?

Me parece que muchos antiguos analistas conductuales se han convertido al mentalismo cognitivo, hasta llegar al punto de que sus publicaciones son aceptadas en *JEAB* y *TBA* (por tanto he considerado cancelar mi suscripción al *JEAB* y mi membresía a *ABAI*). Mi interpretación es que muchos de quienes se convirtieron a la cognición nunca entendieron la filosofía de nuestra ciencia. No puedo entender la facilidad con la que alguien puede cambiar de la determinación medio ambiental a la determinación interna de la conducta.

Parece haber un creciente resurgimiento de una "aproximación cognitivo-conductual". Los legos (i.e., los no conductistas) pueden pasar por alto el conflicto entre ambos

want, but I do not want them messing with behavior analysis. I believe that many former behavior analysts that now adhere to cognition are seeking refuge under the prestige of behavior analysis. Certainly, the name “cognitive-behaviorist” is a contradiction in terms that few of them have noted.

In my case, what at first was patient tolerance towards the cognitive approach soon became aversion, mainly because its adherents mean to displace behavior analysis from academia entirely. Cognitive psychologists go as far as claiming that behavior analysis is on the verge of extinction.

The critical issue is that the attribution of the causes of behavior to events that occur inside the subject has been culturally accepted from the times of Homer (being Descartes who consecrated this notion in his body-mind dualism). The attempt by Skinner to get rid of the illusion of a conscious will runs against the accepted view.

In the behaviorist community, there are difficulties in understanding, or worse, accepting the concepts of radical behaviorism. Are there more effective approaches to face this problem that have not yet been tried?

It is worth remembering that the audiences attending Skinner’s talks left the room convinced of his radical behaviorism, only to change their opinion minutes later. I believe people don’t like to think of themselves as physical-chemical machines that follow universal laws. Instead, they prefer to think of themselves as “fallen angels.” It seems difficult to convince both laymen and our own colleagues that the study of the behavior of organisms has the same status as the study of the behavior of atoms in physics. During all of my academic life, I’ve made the argument against free will and most of the times without success. I cannot think of an effective way to end the illusion of a conscious will.

Schools are reluctant in adopting behavior analysis in its methodology. We cannot forget what Skinner straightforwardly called “the shame of American education.” How do you see this comment today?

Neither Keller nor Skinner succeeded in sowing the seeds of a new educational technology based on behavioral principles. It is impossible to fight against the *status quo* in teachers’ unions nor make contact with the audience in PTA meetings. The same can be said about similar attempts in other environments, like token economies in psychiatric hospitals or jails. “The shame of American education” is a candid reflection by Skinner about the ineffectiveness of the traditional educational system compared with the effectiveness of an educational technology based on behavior analysis. Personalized instruction runs against created interests within education and therefore never became popular (re. *Goodbye Teacher* by Keller).

Skinner often spoke of behavioral science and the philosophy of that science, hoping it would be followed by an increase in research both in amplitude and complexity. Do you think there has been a reverse of the desirable situation with a shortage of laboratory work?

I believe that basic and applied research are the

campos. ¿Cuál es su posición hacia la ciencia cognitiva y cuáles son los puntos críticos de ésta?

Los psicólogos cognitivos pueden “cognitar” todo lo que quieran, pero no quiero que ellos se metan con el análisis de la conducta. Creo que muchos antiguos analistas conductuales que hoy en día se adhieren a la ciencia cognitiva están buscando refugio en el prestigio del análisis de la conducta. Ciertamente, el nombre “conductismo-cognitivo” es una contradicción de términos que muy pocos de ellos han notado.

En mi caso, lo que al principio fue una tolerancia paciente hacia la aproximación cognitiva, rápidamente se convirtió en aversión. Los psicólogos cognitivos llegan al punto de declarar que el análisis de la conducta está al borde de la extinción.

El punto crítico es que la atribución de las causas de la conducta a eventos que ocurren dentro del sujeto ha sido aceptada culturalmente desde los tiempos de Homero (siendo Descartes quien consagró esta noción con su dualismo mente-cuerpo). El intento de Skinner de deshacerse de la ilusión de una voluntad consciente va en contra del punto de vista aceptado.

En la comunidad de analistas conductuales existen dificultades para entender o peor aún, para aceptar los conceptos del conductismo radical. En parte se debe a aspectos técnicos tales como el condicionamiento. ¿Hay aproximaciones más efectivas para encarar este problema que aún no se han probado?

Es importante recordar que las audiencias que asistían a las pláticas de Skinner salían del salón convencidas de su conductismo radical, sólo para cambiar de opinión minutos después. Creo que a las personas no les gusta pensar de sí mismas como máquinas físico-químicas sujetas a leyes universales. En cambio, prefieren pensar que son “ángeles caídos”. Parece difícil convencer tanto a los legos como a nuestros propios colegas que el estudio de la conducta de los organismos tiene el mismo estatus que el estudio de los átomos en física. Durante toda mi carrera académica he argumentado en contra del libre albedrío, en la mayoría de las ocasiones sin éxito. No puedo pensar en una forma efectiva de terminar con la ilusión de una voluntad consciente.

Las escuelas son reacias a adoptar la metodología del análisis de la conducta. No podemos olvidar lo que Skinner directamente llamó “la vergüenza de la educación americana”. ¿Cuál es su opinión sobre ese comentario de Skinner respecto a lo que sucede hoy en día?

Ni Keller ni Skinner fueron exitosos en sembrar las bases de una nueva tecnología educativa basada en principios conductuales. Es imposible ir en contra del estatus quo de los sindicatos de maestros, o hacer contacto con las audiencias en las reuniones de PTA. Lo mismo puede decirse sobre intentos similares en otros ambientes, como el uso de la economía de fichas en hospitales psiquiátricos o en cárceles. “La vergüenza de la educación americana” es una reflexión cándida de Skinner sobre la ineffectividad del sistema de educación tradicional comparada con la efectividad de una tecnología educativa basada en análisis de la conducta. La instrucción programada va en contra de intereses creados en el sistema educativo y por lo tanto nunca fue popular (re. *Adiós al Maestro*, de Keller).

Skinner con frecuencia habló de la ciencia de la conducta y de su filosofía, con la esperanza de que repercutiría en un aumento tanto en la amplitud como en la complejidad de la investigación. ¿Cree usted que ha habido un retroceso en dicha situación dada una preocupante reducción de trabajo en el la-

two sides of the same coin. The trend towards the elimination of basic research within universities and the conversion of applied behavior analysis to mere recipes are both the consequence of not understanding the philosophy of our science.

The dissemination of behavior analysis is occurring but maybe not at the rate that we would like to see. Do we have better chances of integrating with other sciences and disciplines to make them more effective and socially helping?

I believe that turning behavior analysis into a hybrid of several other disciplines (e.g., neuroscience, evolutionary biology or economics) will lead to losing its identity. Behavior analysis can contribute to the development of other disciplines (e.g., Kahneman and “risk aversion” in economics) but not the other way around.

Do you have a favorite book of Skinner’s? If so, why?

My favorite work by Skinner is *The Behavior of Organisms* because it has inspired much of my research. It is the best description of the congruence between the principles and the philosophy of our science.

You are a member of many different psychological associations in Mexico, you’ve also chaired the Mexican Society of Behavior Analysis, and you are a current member of editorial boards in many psychological journals in Latin America. How do you assess the current state of behavior analysis in your country and Latin America?

There are still a few universities in Mexico that favor basic research in behavior analysis. Two of them are the University of Guadalajara and the University of Veracruz, but most other universities in the country follow the curriculum of UNAM against behaviorism and in favor of cognition. Applied behavior analysis has a bit more acceptance within academia because it attracts students due to its effectiveness in the treatment of developmental disorders (especially autism). It is worth noting that training in the application of behavioral principles to human-related issues consists, most of the times, in following canned programs and rarely involves either investigation or innovation.

Regarding the rest of Latin America, I have impressions rather than knowledge. When it comes to basic research in behavior analysis, most is produced in Brazil followed by Mexico and by Colombia in that order. In Chile and Argentina, behavior analysis is still at an early stage. About the rest of Latin America, I have no knowledge. In relation to the use of applied behavior analysis, I assume that due to its usefulness, it should be present in some degree in almost all of Latin America, but I know nothing more about it.

What role has the Mexican Society of Behavior Analysis played in the development and dissemination of the discipline in your country? How do you assess its current state?

The Mexican Society of Behavior Analysis and its journal, *The Mexican Journal of Behavior Analysis*, have both been present in Mexico for more than 40 years, fulfilling

boratorio?

Creo que la investigación aplicada y básica son dos lados de una misma moneda. Ambas, la tendencia a la eliminación de la investigación básica dentro de las universidades y la conversión del análisis conductual aplicado a meras recetas, son la consecuencia de no comprender la filosofía de nuestra ciencia.

Aunque el análisis de la conducta se está disseminando, tal vez no lo hace con la velocidad que nos gustaría. ¿Tenemos mejores oportunidades de integrarnos con otras ciencias y disciplinas para que sean más efectivas y útiles socialmente?

Creo que el convertir el análisis de la conducta en un híbrido de diferentes disciplinas (e.g., neurociencia, biología de la evolución o economía) la conducirá a perder su identidad. El análisis de la conducta puede contribuir al desarrollo de otras disciplinas (e.g., Kahneman y la “aversión al riesgo” en economía) pero no al revés.

¿Tiene usted un escrito o libro favorito de Skinner? Si es así, ¿por qué?

Mi obra favorita de Skinner es *La Conducta de los Organismos*, porque ha inspirado mucha de mi investigación. Es la mejor descripción de la congruencia entre los principios y la filosofía de nuestra ciencia.

Usted es miembro de varias sociedades psicológicas en México, también fue presidente de la Sociedad Mexicana de Análisis de la Conducta y actualmente es miembro del comité editorial de muchas revistas en Latinoamérica. ¿Cómo evalúa el estado actual del análisis de la conducta en su país y en Latinoamérica?

Aún hay unas cuantas universidades en México que favorecen la investigación básica en análisis de la conducta. Dos de éstas son la Universidad de Guadalajara y la Universidad de Veracruz, pero la enseñanza de la psicología en la mayoría de las otras universidades en el país se basa en el curriculum de la UNAM, que está en contra del análisis de la conducta y a favor de la cognición. El análisis conductual aplicado tiene un poco más de aceptación en la academia porque atrae a estudiantes dada su efectividad para el tratamiento de desórdenes del desarrollo (especialmente el autismo). Es importante hacer notar que el entrenamiento en la aplicación de los principios conductuales a problemas de interés humano consiste, en la mayoría de los casos, en seguir programas enlatados y rara vez involucra ya sea investigación o innovación.

Respecto al resto de Latinoamérica, tengo impresiones más que conocimientos. La investigación básica en análisis de la conducta se produce básicamente en Brasil, seguido por México y Colombia, en ese orden. En Chile y Argentina el análisis de la conducta está aún en una etapa inicial. No tengo conocimiento respecto a qué sucede en el resto de Latinoamérica. En relación con el uso del análisis conductual aplicado, supongo que dada su efectividad debe estar presente en algún grado en casi toda Latinoamérica, pero no sé nada más sobre esto.

¿Qué papel ha desempeñado la Sociedad Mexicana de Análisis de la Conducta en el desarrollo y divulgación de nuestra disciplina en su país? ¿Cómo evalúa su estado actual?

La *Sociedad Mexicana de Análisis de la Conducta* y su revista, la *Revista Mexicana de Análisis de la Conducta*, han estado presentes en México por más de 40 años, cumpliendo su misión de disseminar el conocimiento en nuestra disciplina. No obstante, las membresías a la Sociedad y el número de artículos publica-

their mission of disseminating the knowledge of our discipline. Nevertheless, memberships to the Society and the number of published papers in the Journal have been gradually decreasing over the last 10 years.

Setting up the Operant Conditioning Laboratory at UNAM must have not been an easy task. Can you tell us a bit more about it? How were the early days? How is the current state of the laboratory? Have you thought about its future?

When I came back to Mexico, behavior analysis was at its summit. Almost immediately, I was hired by UNAM and granted a space for my laboratory along with solid state equipment to continue my research (mainly using pigeons). Also, a substantial number of students wanted to work with me so that they could learn from my recently-acquired knowledge in New York. It was not difficult to set up the laboratory, and we were almost immediately publishing our first papers. Up until today, the laboratory is still being productive. It has produced more than 140 papers, 12 honor undergraduate theses, three at a masters level, and 12 doctoral dissertations. All of my doctoral students are employed in academia, and they all belong to the prestigious National Research System. Currently, five undergraduate and two doctoral students are working in my laboratory. Once again, following the institutional trend towards eliminating behavior analysis from the school's curriculum the future of the laboratory is uncertain.

You seem to be concerned about a general lack of understanding of the philosophy of our science. Even when there seems to be no effective way to "end the illusion of conscious will," you have contributed to the education of countless students. How do you manage to transmit them this philosophy? Do you see any hope for the future in your students? Are you concerned that they might not reach that congruence between the principles and philosophy of our science?

The inner determination of ostensible behavior (i.e., the "willpower") is the nemesis of behaviorism. Virtually all social control agencies (e.g., economy, government, education, psychotherapy, religion, etc.) promote the notion of personal responsibility. Social precepts make up a formidable enemy for the concept of environmental determination of behavior. Mainstream psychologists (whatever that is) believe that the attribution of behavior to a variety of causes is a matter of personal taste (e.g., the brain, evolution, rationality, or simply the mind). This has led to the idea that there are several psychologies. For more than 40 years of teaching, I have tried different ways to persuade my students (especially undergraduate students) that there is only one psychology and that behaviorism is the best alternative to turn psychology into a dignified natural science. After 40 years of arguing against multiple psychologies, I believe I have only been successful with the students that follow me all the way to their doctoral education (a microscopic number of students when compared to the thousands of undergraduate students that have taken Behavior Analysis 101). I am optimistic about the future of my former doctoral students. All of them are employed in academia and conducting their own research. I believe that their published

dos en la Revista han ido disminuyendo gradualmente durante los últimos 10 años.

Establecer el Laboratorio de Condicionamiento Operante en la UNAM no debió ser una tarea sencilla. ¿Puede decirnos algo al respecto? ¿Cómo fueron sus inicios y cuál es el estado actual del laboratorio? ¿Ha pensado sobre el futuro del laboratorio?

Cuando regresé a México, el análisis de la conducta estaba en su apogeo. Casi inmediatamente fui contratado por la UNAM y me dieron un espacio para mi laboratorio junto con equipo de estado sólido para realizar mi investigación (principalmente con palomas). También un número sustancial de estudiantes quería trabajar conmigo para absorber mis conocimientos recientemente adquiridos en Nueva York. No fue difícil montar el laboratorio y casi inmediatamente estábamos publicando nuestros primeros trabajos. El laboratorio continúa siendo productivo hasta la fecha. Ha producido más de 140 artículos, 12 tesis de licenciatura, 3 de maestría y 12 de doctorado. Todos mis estudiantes graduados están empleados en la academia y todos pertenecen al prestigioso Sistema Nacional de Investigadores. Actualmente, cinco estudiantes no graduados y dos de doctorado están trabajando en mi laboratorio. En vista de la tendencia institucional para desaparecer el análisis de la conducta del currículum de nuestra Facultad, el futuro del laboratorio es incierto.

Usted parece preocupado por la falta de comprensión de la filosofía de nuestra ciencia. Aún cuando parece que no hay una forma efectiva de terminar con la "ilusión de la voluntad consciente", usted ha contribuido a la educación de innumerables estudiantes. ¿Cómo logró transmitir a sus estudiantes dicha filosofía? ¿Ve esperanza en el futuro de sus estudiantes? ¿Está preocupado de que no logren establecer la congruencia entre los principios y la filosofía de nuestra ciencia?

La determinación interna de la conducta ostensible (i.e., "la fuerza de voluntad") es la némesis del conductismo. Virtualmente todas las agencias de control social (e.g., economía, gobierno, educación, psicoterapia, religión, etc.) promueven la noción de la responsabilidad personal. Los preceptos sociales son enemigos formidables para el concepto de la determinación ambiental de la conducta. Los psicólogos convencionales (cualquier cosa que eso signifique) creen que el atribuir la conducta a una variedad de causas es una cuestión de gusto personal (e.g., el cerebro, la evolución, la racionalidad o simplemente la mente). Esto ha conducido a la idea de que hay diferentes psicologías. En mis más de 40 años como profesor he tratado diferentes formas de persuadir a mis estudiantes (especialmente a los no graduados) que hay una sola psicología y que el conductismo es la mejor alternativa para convertir a la psicología en una ciencia natural digna. Después de 40 años de argumentar en contra de las múltiples psicologías, creo que sólo he tenido éxito con los estudiantes que me han seguido hasta su educación doctoral (una cantidad microscópica de estudiantes comparada con los miles de estudiantes que han tomado el curso de análisis de la conducta 101). Soy optimista sobre el futuro de mis antiguos estudiantes de doctorado. Todos ellos están empleados en la academia y están conduciendo su propia investigación. Creo que sus trabajos publicados muestran consistencia entre los principios del análisis de la conducta

papers show consistency between the principles of behavior analysis and the philosophy of behaviorism. As for undergraduate students who have conducted their thesis research in the laboratory, I am not sure...one of them once said that his rats pressed the lever because they “realize” that is how they will obtain food! 🐭

y la filosofía del conductismo. Respecto a los estudiantes no graduados que han hecho sus tesis en mi laboratorio, no estoy seguro ... uno de ellos una vez dijo que sus ratas presionaban la palanca porque “se daban cuenta” de que así obtenían comida! 🐭

Why Do Behavior Analysts Speak “Funny”?

Per Holth, PhD

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soapbox

Soapbox is a new platform for the directors of the B. F. Skinner Foundation's Board and members of the Operants' Editorial Board to express their opinions on a variety of subjects.

Behavior analysts are often accused of speaking a kind of tribal language. This is thought to hamper the general understanding of the field, and the spread of applications outside “the tribe.” Our “behavior-speak” is sometimes even characterized as a suppression technique. Thus, the use of a technical vocabulary poses an interesting dilemma: On the one hand, a language that few outside our field understand may not be a useful way to promote our science. On the other hand, there were reasons for the development of a technical vocabulary in the first place, and those reasons are easy to forget in a storm of complaints about “behavior-speak.” Moreover, those reasons prevail.

So, what are the reasons for continuing to practice and to cultivate our technical language? We speak of reinforcement, discrimination, extinction, schedules of reinforcement, operants, and so on. Simultaneously, we have popular or colloquial terms, which at least to some extent, seem to overlap with our technical terms: Reward, attention, withholding of attention, now-and-then rewards, purposive behavior, and so on. The latter terms are easy to understand. How and why do they need replacements? Even a behavior analyst colleague raised the question, “How, then, do I say ‘joint attention’ in Skinnerese?” We could add, “How do we say ‘memory,’ how do we say ‘development,’ ‘cognition,’ and so on?” The answer is this: We don’t. Reinforcement is not the same as rewards, and discrimination is not the same as attention.

As Donahoe and Palmer noted in their book *Learning and Complex Behavior*, “there can be no one account of ‘attention’ because there is not one phenomenon of attention. [Second,] Treating ‘attention’ as a thing tempts us to use it as an explanation of behavior rather than—at best—a heading under which a set of superficially similar phenomena may be grouped.” The same goes for ‘joint attention.’ This term has been used to describe several different functions. At the same time, in the words of Donahoe and Palmer: “Although there is no technical justification for the term attention, the rejection of the term as scientifically useful in no way denies the importance of the phenomena conventionally grouped under that heading.”

Already in his 1938 book, Skinner pointed out that, “the existence of a popular term does create the presumption in favor of the existence of a corresponding experimentally real concept, but this does not free us from the necessity



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ty of defining the class and of demonstrating the reality if the term is to be used for scientific purposes.”

It is often implied that essential things covered by the colloquial terms are ignored when we change to technical terms. A famous introductory psychology textbook asserted that,

a strict behavioral approach does not consider the individual's mental processes. Psychologists other than behaviorists will often record what a person says about his or her conscious experiences (a verbal report), and from this objective data draw inferences about the person's mental activity. But by and large, behavioral psychologists have chosen not to conjecture about the mental processes that intervene between the stimulus and the response (Skinner, 1981). Today, few psychologists would regard themselves as strict behaviorists. Nevertheless, many modern developments in psychology have evolved from the work of behaviorists.


Now, let us see what happens if similar claims are made in a different discipline such as, say, 'weather science':

A strict meteorological approach does not consider the weather. Weathermen other than meteorologists will often measure (by their special devices) the wind strength and amount of rain, and from these objective data draw inferences about the weather activity. But by and large, meteorological weathermen have chosen not to conjecture about the weather processes that intervene between antecedents (temperature changes, atmospheric pres-

ures etc.) and the wind, clouds and rain (Bostonweather, 2016). Today, few weathermen would regard themselves as strict meteorologists. Nevertheless, many modern developments in weather forecasting have evolved from the work of meteorologists.

Should we complain to the meteorologists for constantly talking exclusively about atmospheric pressures, temperatures, clouds, wind, rain, and even snow but totally leaving out what the weather is doing as such?

In Skinner's words, in *Contingencies of Reinforcement*, 1969, "It is often said that an analysis of behavior in terms of ontogenic contingencies "leaves something out of account," and this is true. It leaves out of account habits, ideas, cognitive processes, needs, drives, traits, and so on. But it does not neglect the facts upon which these concepts are based. It seeks a more effective formulation of the very contingencies to which those who use such concepts must eventually turn to explain their explanations."

Rather than going back to the popular terms of colloquial speech, then, we need to focus our efforts on teaching about what gave rise to and what led to refinements of our terms, and how we currently use those terms in behavior analysis. Certainly, in our teaching we do have to speak in terms that our listeners can "understand." When properly taught, the technical terms no longer appear so funny. Yet, great fun awaits those who have learned to apply them. 




Winner of 2016 FABA B. F. Skinner Foundation Student Research Award is Announced



Jonathan Kyle Fernand
University of Florida
Department of Psychology,
Behavior Analysis Program

Jonathan Kyle Fernand from the University of Florida is the winner of the 2016 Florida Association for Behavior Analysis (FABA) B. F. Skinner Foundation Student Research Award. Below is the abstract of the winning application:

Functional analyses are considered the gold standard in behavioral assessments in that they identify the environmental variables influencing a behavior relative to alternative assessment methods (e.g., descriptive assessments); however, several different methodologies exist for the assessment of inappropriate mealtime behavior (IMB) for children with pediatric feeding disorders (Girolami & Scotti, 2001, Piazza et al., 2003, Najdowski et al., 2003). The purpose of the current study is to compare spoon and plate presentation procedures from prior research in the assessment of IMB using a within-subject analysis for children diagnosed with autism who engage in self-feeding. So far, pilot data indicate the spoon presentation method might not control for all relevant variables (e.g., establishing operations), producing a potential false positive in the attention condition. Results of the proposed study will help in guiding future research regarding identification of critical variables in the assessment of pediatric feeding disorders. Future studies will be able to use the current method as a refinement in assessment procedures for determining prevalence of functions for individuals with feeding disorders. Finally, the outcome of this experiment could impact how clinicians utilize functional analysis methodology in the assessment of and eventual treatment for food-related problem behavior. 

Professor Paolo Tosolin: A Path to Victory



Interview by Anna Luzi



Professor, in addition to many other positions, you are the president of Association for the Advancement of Radical Behavior Analysis (AARBA), an Italian scientific society of behavior analysis, founded 15 years ago. Can you describe how AARBA is organized and what is its mission?

The Association was founded in 2001 by the pioneer of applied behavior analysis (ABA) in Italy, Dr. Ettore Caracciolo, and his first pupils, among whom were Silvia Perini, Rosalba Larcana, and me. The main reason to form AARBA was the gradual loosening of scientific and methodological rigor by many Italian behaviorists. They were busy making alliances with the varied world of Italian psychology rather than acting as an alternative, and thus antagonists, to cognitivism.

Emblematic of this progressive shift from behavioral psychology to less rigorous approaches was the change of name imposed in 1991 on the Italian Association of Behavior Analysis and Modification (AIAMC) — the leading scientific society of Italian behaviorists. The name was then changed to *Italian Association of Analysis and Modification of Behavior and Cognitive-Behavioral Therapy*, with misleading and limiting additions of the terms “cognitive” and “therapy”.

AARBA was created as a reaction to this decline, putting forward three goals: 1) exclusive use of the experimental method to underpin therapeutic and intervention options, 2) expansion of the scope of ABA in Italy to all areas of the society, and 3) bringing back the study and experimentation on the cognitive and emotional aspects into the fold of behavior analysis, as can be seen from the adoption of the term “radical” referred to behavior analysis in the AARBA acronym. This term, in fact, indicates that behaviorism is defined “radical” precisely because it deals with prediction and control not only of motor behaviors, but also of verbal and emotional behaviors.

The AARBA mission is to spread the principles and technologies of behavior analysis into the society, while its vision is to use a science-based marketing, directly approaching the end users of ABA: patients, managers, teachers, parents, athletes, police officers; and not just providers of services such as psychologists, sociologists and psychiatrists. A point particularly in line with this vision is the lobbying effort aimed at influencing the writing of laws and regulations in Italy and Europe, in order to make them consistent with laws and paradigms of the science of behavior. That is the only way to make regulations more powerful in promoting desired behaviors.

Can you tell us when your interest in behaviorist thinking was born? We know that in those years scholars like Ettore Caracciolo had started experimental research of the learning processes different from the pavlovian tradition of Soviet reflexology. Can we say that Professor Caracciolo was the forerunner of what we now call behavior analysis?

Behaviorism became an official subject of study in Italy in 1942, with a work of Virgilio Lazzeroni, professor at the University of Siena. But only at the end of the 1960s did it begin an organic spreading path by Isaiah Pessotti and then by Ettore Caracciolo, the first real behavior analyst in a world mostly populated by scholars of Russian reflexology and by



Graduated in psychology (experimental program) from the University of Padua, Prof. Fabio Tosolin is the psychologist who introduced in Italy the methodology of Organizational Behavior Management (OBM). He is a consultant for many Italian and multinational companies, and a professor of psychology of work and of learning technologies at several universities. Dr. Tosolin is the author of numerous experimental studies and texts on performance management, performance matrix, learning technologies, and performance-based training. He is the president of the Association for the Advancement of Radical Behavior Analysis (AARBA), a scientific society of behavior analysts that operates to advance the scientific method in psychology of work, in productive organizations, and civil society.

cognitive interpreters of reinforcement theory.

Caracciolo was a young physician, establishing a historic internship of psychology at the Faculty of Medicine, University of Milan, open to all and, therefore, attended by students of medicine and philosophy. Very few physicians specialized in psychology (the psychology degree was a long way off).

With Ettore Caracciolo, the psychology of behavior found a charismatic leader, capable to bring out forcefully psychology from the academic world to the society. The spread of the method was greatly helped by the unsurpassed ability of Caracciolo to fascinate students with his exceptional communication skills. The dean of the department had allowed this young professor of medicine to use the Lecture Hall, one of the few rooms that could host hundreds of students. And the audience grew every week to exceed the number of available places, so the passages between the chairs and even the adjacent hallways were filled.

I had the privilege to attend a lecture that professor Ettore Caracciolo gave on Skinner at the Psychology Institute of the Medical Faculty of Milan, in the early 70's. Professor Caracciolo presented on "reinforcement theory" and it made the difference for me and for twenty fellow students. The professor was a great expert on a subject that was so new but also very contested, making it all the more fascinating. Particularly, he was a real storyteller, unlike his colleagues from other theoretical orientations. He spoke standing up and changing facial expressions and posture like a consummate actor. Professor Caracciolo's pedagogy was liberating.

What was even more rare, he made the material clear and understandable to all students. The professor made schedules of reinforcement, matching law, and verbal behavior comprehensible by an absolutely extraordinary illustrative capacity.

But there was more: we were given jokes and examples as a perfect application of intermittent reinforcement, especially variable ratio. The students who were attentive to the words of the professor were positively reinforced by being able to laugh out loud at his unpredictable jokes, irony, and continuous hilarious sarcasm towards therapies and not-scientific methods used at the time. Gestalt psychology and psychoanalysis were the favorite targets and his presentation converted the students into followers of a method that really seemed to make a difference. If you didn't pay attention, you lost the gag. And then you were attentive, ready to seize gestures, winks and jokes on Chomsky's stupidity, on the inadequacy of educational ideologies, on "head shrinkers", but also on sex, drugs, cinema, and marketing policies. The more you listened, the more you understood the engaging science of human behavior. I think I can say that no one after professor Caracciolo has ever been able to have his students leave the classroom

with the imperative exhortation to "save the world through behavior analysis."

Professor Caracciolo mastered the art of open questions, constantly addressing the audience — a sort of continuous shaping that appeared to be conducted "off the cuff", which made it even more effective. None of the students had ever witnessed a university lecture like that before. All of us instantly became followers.

But Caracciolo's lectures were not merely exciting. He was, first and foremost, a scientist, and a great expert of research methodology. He was able to defeat the lovers of psycho-disciplines, revealing the methodological errors of their research, and the epistemological errors of their reasoning. There was no scholar of psychology who could keep up with him on the subject of experimental design and data analysis.

In Milan first, then in Messina in Sicily, and finally again in Milan, he founded important research institutes, specializing in behavior analysis. Under his guidance,

dozens of students, researchers, and professors of psychology and medicine organized thousands of experiments, based on the discoveries and studies of B. F. Skinner. This work established a solid basis for the diffusion of behavior analysis in Italy: Dozens of Caracciolo's students continued their career in other universities around the country. Caracciolo even managed to place many of his students in dozens of institutions for cognitive rehabilitation — a feat believed to be impossible before him.

To promote his and his students' immense scientific output, Caracciolo frequented international congresses. That allowed him to meet and to invite to Italy some of the greatest scientists of behavior: B. F. Skinner, Fred S. Keller, Sidney Bijou, Charles Catania, Murray Sidman, Emilio Ribes Inesta, and Marc Richelle.

The school of Ettore Caracciolo also takes the credit for the consistent and effective spread of scientific principles and technologies of behavior analysis based on the rigorous way, as it was intended by Skinner.

Why did not other academics of those years produce the same effect in terms of diffusion of behavior analysis in other parts of Italy?

In the 70's and 80's, several other university centers studied behavioral technologies, often with a propensity for running an analysis less strict than Skinnerian behavior analysis. Bandura, Eysenck, Beck, Staats and social behaviorism, as well as "behavior modification" were fashionable at that time. They would later get into cognitive-behavior therapy and positive psychology, rather than a real applied behavior analysis.

I think the main reason for the low success in the dissemination of behavior analysis by many academics and



Professor Ettore Caracciolo

professionals should be blamed on their individualism, and on their poor social, educational, and marketing skills.

I also think that an error has been made in an attempt to not overly displease psychologists and psychiatrists. For fear of colliding with the antagonists, academics often allied with them. They gave up on distinguishing themselves from the dull world of psycho-animistic doctrines, refusing to highlight the competitive advantage that would come from forcefully affirming the supremacy of the evidence-based approach. In a kind of positive psychology before its time, for decades in many Italian universities, the behaviorists allowed the students of psychology to be taught that “once upon a time there was the S-R psychology.”

While Caracciolo was growing behavior analysts, followers with a mission, his colleagues were limited to churn out graduates in psychology with a “behavioral orientation,” looking for a job.

In Italy, since the 70's, behavioral applications were directed mostly to the field of special education. The behavior therapy, later called “behavior modification,” was applied to education of disabled children. In adult education and in other fields, such as business, these methodologies have been neglected. Why did this happen, in your opinion?

First, let me address the issue of rehabilitation. Both regular and special education in Italy are almost entirely under the control of the State. The system considers teachers as “maieutics,” in the belief that it’s their responsibility to verify alleged inclinations of students in order to channel them towards this or that curriculum. A teacher’s success in Italy is measured in hours spent teaching, not in pupils’ learning. It is therefore not very appealing for school teachers to adopt methods and techniques of behavior analysis, which require a large effort, but bring little recognition from their employer.

The striking successes of the early behaviorists in special education in many different institutions, often private, were dwarfed by the special education laws that prevented the development of strategies based on scientific methods. The Italian law dictates that students with intellectual disabilities must spend much of their time in the classroom with other students, following, so to speak, the traditional lessons of their companions, without regard to the possession of the necessary prerequisites.

The reasons for this insane legislative choice are ideological. Such an approach, according to legislators, would prevent the marginalization of the disabled subjects. What they fail to realize is that because of such treatment, the disabled pupils are sentenced to accumulate delays that become progressively unbridgeable.

However, despite the unfavorable political and cultural environment, there have been major initiatives for the affirmation of behavior analytic methods for special education. Ettore Caracciolo has established a course to support teachers at the Medical Faculty of Milan, and presently many other schools have similar courses, often promoted and led by his former students.

Now let’s talk about behavior analysis in the or-

ganizational field. The main reason for the slow uptake of scientific methods here resides only partially with the legislation. Another part is attributable to the university training of our managers. Virtually all human resource (HR) managers have a non-scientific, or even anti-scientific education background. Almost in every school of management they are taught strategies which ignore, or are in a sharp contrast to the behavior technologies. Almost no HR expert in Italy is able to understand the reasons for the ineffectiveness of the commonly used performance appraisal systems. Cognitivism and constructivism have had a good game in building a verbal community of consultants and HR managers, which reinforces the emission of buzzwords such as *complexity*, *climate*, *interoperability*, *relationship*, *action research*, *group*, *cooperation*, and *development*. This is a highly generic and undefined lexicon that prevails in European companies, and is also adopted in most of the EU funding regulations.

Even in the Italian behaviorist community, it has been believed for many years that the application of behavior analysis to the world of work consisted of assertive training, and little more. In Italy, you can count behaviorists-experts in organizational behavior management (OBM) with the fingers on one hand. If you couple that with the almost total absence of scientific training on organizational behavior in universities, it is not surprising that virtually no HR manager in the country has ever heard of OBM, performance management (PM), and behavior-based safety (BBS). As the result, climate analysis, outdoor training, and various psychosocial derivation strategies are adopted by managers, in the absence of known alternatives.

In the last 10 years, however, many things have changed. We stopped teaching behavior analysis to psychologists and those responsible for human resources. Instead, we began to reach out directly to engineers and production managers. As the result, the awareness of our technologies in the business world has risen sharply.

Going back to behavior therapy: The clinical environment is, indeed, where Italian behaviorists thrive. I believe that this has largely happened because of the Italian laws, which mandate a four-year graduate school for everyone who wants to practice as a clinical psychologist. Graduate schools in Italy can be, and often are, run by licensed private organizations, with ample freedom to teach in different frames of reference. Italian behaviorists have been able to organize in these schools, and only there, some courses, completely based on scientific principles and behavioral technologies, are taught by true behavior analysts. This explains why associations and institutions such as SITCC (Italian Society for Behavioral and Cognitive Therapy) and especially AIAMC (Association of Behavior Analysis and Modification) have greatly contributed over 30 years in training of thousands of therapists.

Clinical therapy is the only area in which behavioral technologies are not strongly opposed. Also, it is the only profession in which the behavioral-oriented psychologist has complete freedom of choice on the methods and techniques to be used, since he or she is working one-on-one with his or her patient and does not have to account to colleagues with

other backgrounds.

An important development leads us to hope for the brighter future of ABA in Italy: A few months ago AIAMC, the first and largest scientific society of Italian behaviorists (2,000 members), amended its Articles of Association. Every member is now mandated to exclusively adopt evidence-based methods and techniques. All 10 schools run by the Association are to deliver only teachings perfectly in tune with the scientific principles of behavioral technologies.

It is obvious how such a “return to the original methodological rigor,” by one of the largest associations of behaviorists in Europe, with thousands of members, constitutes a milestone for a renewed spread of behavior analysis, at least on the side of therapy. It is reasonable to think that such a breakthrough, tenaciously pursued by Aristide Saggino, the president of AIAMC, can increase the spread of our discipline. There is also a growing demand for short and effective therapies, imposed by the economic crisis, that forces the state-run health institutions to seek greater-efficiency interventions.

A strong message of this renewed trend towards evidence-based methods was delivered at 14th European Conference of Behavior Analysis that took place in June, 2016. The event brought together hundreds of psychologists, doctors, engineers, entrepreneurs, managers, politicians and public officials. This year, the element of novelty and of great importance was the fact that the conference was organized in partnership between AARBA and AIAMC. It was the first time in almost 50 years that Italian behaviorists were talking with one voice.

Instead of working in the field of autism treatment, which happens to be an application quite widespread today in Italy, you work mainly in other fields, such as Organizational Behavior and Behavioral Economics. It appears that a perspective offered by B. F. Skinner in *Walden Two* did not get enough popularity in Italy. The principle that shaping can improve the quality of life of autistic children, is not perceived as having the same power to develop additional skills in workers, improving their performance and safety. Tell us about the obstacles you had to overcome in your work and the ones that still lie ahead. Can you give us some success stories?

It is true, the treatment of autism with evidence-based methods is growing, thanks to parents and associations of families who seek ABA therapists with increasing frequency.

The situation with OBM is not that clear-cut. From the very beginning, the true followers of Skinner were trying to encourage the spread of behavior analysis within civil society. To this end, we decided to add a diverse and innovative strategy to the scientific production of experiments and publications, a kind of behavioral science of marketing.

There are two elements in this new course:

First, it was decided to open behavior analysis training to scientists of other disciplines, not only to psychologists, and to business people. We need to address the consumer demand for behavior analytic services: engineers with behavior-based safety (BBS), physicians with behavior-

al medicine, teachers, and parents of children with developmental issues. We followed the advice of Bill Hopkins of Auburn University. As a result of his visits to Italy, he wrote to us: “train the engineers, not the psychologists.” All the international conferences of AARBA in the past 10 years have included a growing number of symposia dedicated to scientists and professionals working in vertical industries (performance management (PM) and BBS), and dentistry (OBM, customer behavior and patient compliance).

Today, as the result, many professionals in Italy use behavioral technologies for their needs, and seek behavior analytic consultants. Businesses are looking for those trained on these issues, to the point that today Italy has a *Directory of Italian Qualified Experts in BBS* that lists more than 1,000 engineers with a post-graduate training of 80 hours in BBS. AARBA set up a certification in BBS, which was developed in partnership with Cambridge Center for Behavioral Studies in Massachusetts. The Politecnico di Milano, the largest engineering school in Europe, has made a mandatory course on this subject in the Safety Engineering degree. Dozens of engineers obtain a degree in Safety Engineering with dissertations and experimental thesis on behavior analysis and behavior-based safety.

The outcome of our strategy is that today many companies and many managers claim to use specific behavior analytic technologies, rather than generic and vaguely psychosocial forms of organizational consultancy. Today, the largest chemical, mechanical, food, civil engineering, glass, transport companies, paper mills, infrastructure and health companies extensively and increasingly adopt BBS methods, so hundreds of thousands of Italian workers are safer year after year.

The second marketing action of the science of behavior in Italy is to address the state institutions and agencies that impose laws, regulations, rules and guidelines, in order to influence the writing of these rules.

As behaviorists, we know that laws are conditional statements. They generally consist of verbal rules that prescribe the manner of behavior in the presence of certain antecedents and specify consequences that are paid according to behaviors exhibited. For example, in Italy the law prescribes that if a motorist is in an accident that involves a pedestrian (antecedent), he must assist the injured and call the police. Upon arrival, policemen almost always take away the driver's license of the person who stayed to help, and an accident can result in up to 12 years of jail time for the driver. Since these contingencies were established some years ago, almost no driver stops any more to assist the victims of traffic accidents, given the high probability of losing their jobs as a result of the withdrawal of the license and the fear of imprisonment.

Another example of a law that specifies inappropriate contingencies is the legislation on training: recently Italy has established stricter standards for the training of workers in accident prevention. The law specifies the number of hours of training regardless of the prerequisites. Because of such an inadequate system, companies and their consultants focus on measuring the length of training much more than

on results. In case of emergencies, the resulting responsiveness is extremely modest, despite the huge flow of money from companies to trainers, who provide such training to nearly 20 million workers every year. In many fields, state laws induce the exclusive use of punishments, rather than reinforcing strategies. Punishment is often delivered based on the attitudes of appointed inspectors and results of their occasional checks, rather than through objective and frequent assessments.

The behavior analysis situation in the organizational field has dramatically changed. In 2006, AARBA established the European Conference on OBM & BBS. Due to the participation of almost all the major scientists and professionals in the field, the conference has become the most important in the world.

In 2011, the President of the Italian Republic awarded a presidential medal to the European Conference on OBM & BBS. In the following year the Labor Minister took part in the event. The president of AARBA was heard by the senators of the Committee for Workplace Fatalities. The Italian National Agency for Industrial Safety (INAIL) finances BBS scientific activities, with AARBA to conduct the first major experimental research on the effects of BBS in the hospital field (reduction of clinical risk).

With difficulty, but with some success, behavior analysis in Italy is gaining a significant role in the institutions that guide the behavior of citizens through the enactment of laws. Maybe we are not so far from the day when lawmakers will ask for the support of behavior analysts in writing the general conditional rules. When this will happen, then Walden Two will no longer be only an utopia.

Compared to the English-speaking world, the Italian culture is an idealism matrix, inspired by the philosophy of Benedetto Croce and Giovanni Gentile. Science is tasked with “measurement” of reality, while philosophy “includes” and “explains” the reality. This vision, combined with Catholic culture, inhibited the development of a scientific culture and particularly experimental research. In your experience, are things changing? Is it possible today to make up for lost time? How can you combat these prejudices, still prevalent in much of the academic world?

You suggested the answer in the first part of the question: the idealism culture that prevails in Italy is probably the reason for the constant attempts by the so-called cognitive-behavioral psychologists to measure behaviors on a parametric basis, while leaving to the imagination the task of interpreting, understanding and explaining the data. That

is why in everyday clinical practice a disorder may be treated with a certain technique, the selection of which depends not on the nature of the disorder, but on the opinion of the therapist.

The Italian rules of education pose considerable limitations to the possibility of establishing a degree in behavior analysis. The sporadic presence of teachers of behaviorist persuasion is not enough to train new generations of psychologists in a behaviorist way. The university career is highly bureaucratized, and determined by filters placed by already established teachers.

We must admit that fifty years after the early behavior analysis courses, there is still only one university with an “organic” educational path of behavioral orientation. And even in post-graduate training, the masters course instituted by Silvia Perini at the University of Parma is an isolated incident, a wonderful exception.

The Italian public examinations do not assess the scientific approach in their evaluation systems, for example the effectiveness of the techniques taught to students. Being a behavior analyst, therefore, does not provide any advantages in an academic career. Careers are often determined far more by the ability to team up with colleagues of different orientations, rather than by the explicit membership in a scientific community. This explains, at least in part, why the spread of behavioral analysis was, and still is, so slow and patchy.

There are no reasons to be optimistic about the spread of practices derived from behavior analysis in the academic world, at least short term. For this reason, we consider it a priority to influence the legislature to require the adoption of evidence-based methods and psychological techniques that lead to measurable results, similar to what

medical legislation requires. If the laws and the customers will ask the psychologists for more behavior analysis, then the academy will adapt.

The applications that we talk about in the field of safety in the workplace are practical examples of successful and effective reduction of mortality and injuries related to non-compliant behavior. Yet, despite of these interesting and verifiable results, business is still fascinated by interpretative models of psychoanalysis. B. F. Skinner had a very sober, very scientific way of communicating. He speaks of *laws* of behavior, and perhaps even this lexicon is little accepted when it comes to issues concerning human behavior. Is there anything that could be done to encourage those who make personnel decisions to evaluate the behaviorist approach more favorably?



Fabio Tosolin (right) and Julie S. Vargas, President of the B. F. Skinner Foundation, at the Foundation's reception during the ABAI Convention in Chicago. May, 2016.

Small businesses make up the vast majority of Italian businesses. These companies do not have access to relevant information that could induce them to adopt the managerial methods related to OBM. The State does not contribute in any way to facilitate the introduction of managerial methods based on positive reinforcement systems.

In the field of workplace safety, for example, the Italian law only explicitly provides for actions based on the delivery of antecedents (information and training), and on the provision of punishment to workers and managers. The possibility of using other methods (for example positive reinforcement and feedback) is not contemplated and indeed, in the case of rigorous and repeated assessment, the documentation of even a small number of high-risk behaviors may lead to fines for the company.

In contrast, the introduction of effective and efficient methods in the most productive organizations produces a more favorable situation. In Italy, mainly multinational corporations adopt the OBM-derived technologies. This happens for two reasons: the big business managers have access to the conference of AARBA; and large companies can take advantage of a unique situation which makes them free from the obligation to comply with the bureaucratic and counter-productive rules in different countries.

We believe that the current economic crisis will be a strong boost to the adoption of effective and evidence-based methods. Many business owners are forced to consider the cost/benefit ratio as it had never been necessary to do in the years of growth and successes determined by technological supremacy, infrastructure, and know-how. Globalization leveled the advantages obtainable through these three elements, now equally accessible by all competitors, virtually anywhere in the world. The behavior of workers is the only competitive advantage that an entrepreneur cannot buy with money. The behavior can be built and sharpened only by those who adopt the technologies of behavior analysis, and this will make our discipline a key element in the global competition.

So far, in Italy, behavior-based safety (BBS) has established itself in a powerful way. This is a part of OBM being more acceptable by the conformist and by the vaguely-hostile to business and to the profit culture typical of Continental Europe, and especially of Italy — a country with strong communist and Catholic roots.

However, a lot is going to change: the current welfare system in Italy is sustainable only for a short time. In a nation of 60 million people, 17 million are retired, 3 million are government employees, and 5 million are directly or indirectly assisted by the state. The few workers remaining to produce wealth are now a small minority, gradually tapering every day.

The reality for organizations consists of negative factors on which all economists, and now even many politicians, agree: pervasive and hostile bureaucracy, level of taxation among the highest in the world, a slow legal system unable to ensure legal certainty, a high rate of corruption, pervasive mafias, and, finally, employment legislation that tends to impose the use of antecedents and extinction as

prevalent methods of human resource management.

Faced with such a depressing scenario companies will have to make inescapable choices: relocation, tax avoidance, or performance management. The abandonment of sterile methods of performance appraisal and psychosocial methods widely used today should encourage much more effective OBM technologies. Performance management, performance feedback, performance-based training, and BBS will be affirmed simply because in a globalized world the companies with these methods will prevail.

Thanks to the fact that AARBA is translating publications and manuals already very popular in the US, consultants like Aubrey Daniels are gaining more popularity in Italy. Their work is aimed at applying behavioral models of success in performance management, with results recognized by the international community, not only by their clients. What do you expect from the publication of such books and manuals in Italian?

AARBA has sponsored the publication of a thick applied behavior analysis manual specific to dentistry, which is now the most popular text among Italian dentists. It is more widespread than any text on dental procedures. The Italian translation of Dr. Terry McSween's manual on BBS has also become a must-have book, and it is on the table of many managers of our big companies.

By virtue of these two successes, we have translated into Italian the most important, widespread and easy to read text on performance management, written by Aubrey Daniels. The text has not been adopted by any faculty of psychology in Italy, nor do I expect it to be in the future, but it is used by the Faculty of Engineering, where managers are trained.

We plan to publish a reference text on corporate human resource management. And if companies will ask for more OBM, then our psychologists and sociologists will change their attitude and even the Faculties of Psychology, over time, will adapt.

The American Psychological Association voted B. F. Skinner as the most important and influential psychologist of the 20th Century. His methodological legacy is still strong and pervasive, even though sometimes not recognized by those who continue to use reifications of metaphors, such as mind, consciousness, or will. Can we ever get rid of these legacies still so widespread even in the organizational world? If yes, how?

Skinner is undoubtedly the leading psychologist of the 20th Century. And one day he may be even called the leading scientist of all time. His findings help to improve life in virtually every area. By adopting his discoveries we can get a brain-injured person, otherwise destined to spend his life on the floor of an asylum, to live with dignity. We can allow a pilot to learn maneuvers not teachable except through the use of the simulator designed as a teaching machine. You can change the fate of the planet by designing functional contingencies for the development of environment-friendly behaviors. And you can build values designed as verbal rules that evoke and maintain conduct to be in place for a long time, even in the absence of those who built it, and in

the presence of adverse contingencies.

Why, then, is it difficult for behavior analysis to find supporters in Italy and Continental Europe? The answer is quite simple: Behavior analysis is not reinforcing for those who may support it in our institutions. A politician or an officer is free to choose among many ways, presumed better even if of dubious effectiveness. For this reason, then as now, it is possible to get a job in Italy as a psychologist in health care, or play a role in educational or social welfare agencies, or in business, only by complying to formal bureaucratic regulations, without any relation to the effectiveness for patients and service users.

Even the mechanisms for evaluation of teachers in non-scientific disciplines (and psychology is considered one of those in Italy), motivate young people to pursue their careers guided by aggregations of teachers already in that role, rather than by planning and carrying out experiments or measurable results. No teacher or cognitive therapist in Italian schools has ever been judged based on the effectiveness of teaching skills or interventions. So for at least 30 years, to declare oneself a behaviorist constituted a handicap rather than a competitive advantage in both academic studies, and working life.

While the followers of Skinner directed their efforts to the production of studies and research in support of their science, the followers of any other socio-psychological orientation were spending their energies on three activities, irrelevant to the advancement of science, but instrumental to the affirmation of their theories: 1) influencing the legislature, 2) occupation of spaces in all areas of civil society, and 3) colonization of the universities.

The opponents of behavior analysis would make no headway if they were obliged to comply with rules similar to those in medicine, or in engineering. That is, if they were

obliged to adopt only methods and techniques which passed the scrutiny of scientific experimentation, effectively demonstrated by randomized controlled trials.

For years, we have tried, perhaps too naively, to impose the adoption of evidence-based methods on psychologists and bureaucrats who saw the success of those technologies as a threat to their careers and a burdensome distortion of their customs.

You ask if we can ever get rid of this cultural legacy antagonistic to the science of behavior? I think yes, but only if we, in turn, will adopt methods of persuasion in line with the principles of behavior analysis.

We have already had gratifying successes in various fields, addressing the users of services, rather than service providers. So far engineers, dentists and parents of problematic children in Italy seek and require our technologies. Therefore we think that turning to new categories of users of behavior analytic services with books, courses, conferences, debates, application examples, will determine our success, requiring institutions and universities to provide more behavior analysis.

All this requires us to be able to influence lawmakers better than we were able to do in the past. Surely, we need to go back to build more apostles of behavior analysis in all fields, as did our mentor Ettore Caracciolo.

And finally, we should present ourselves united at the negotiating table with lawmakers and with the institutions on whose decisions depends much of our success.

AARBA and now AIAMC will devote a portion of their association activities to teaching members the elements of behavior analytic marketing, and to develop values such as a sense of belonging, the pride of being scientists called by destiny to “save the world with behavior analysis”. At least, this seems to be the way to victory. 🦋



brevis

A Call for Volunteers

Operants is looking to expand the list of energetic volunteer correspondents and translators worldwide to help produce appealing and behaviorally-oriented articles for the magazine. If conducting an interview, reviewing a book, reporting the news, and translating articles is something you or your friends and colleagues would like to participate in, please contact us at operants@bfskinner.org. We continue to add new languages and representatives from new countries. Even if your country or favorite topic was recently reported on, we can still use your help! Or maybe you feel that *Operants'* readers will benefit from the coverage of a specific subject or a profile of an individual — let us know! 🦋

B. F. Skinner Foundation and *Operants* Were Well-Represented at the 2016 ABAI Convention

Reporting and photographs by Dr. Shiri Ayvazo, Dr. Jeremy H. Greenberg, Natalie Werner, and Sheila Habarad



Panelists (left to right): Dr. Jeremy H. Greenberg, Bruna Colombo Dos Santos, Dr. Shiri Ayvazo, and Dr. Hui-Ting (Tina) Wang.

Jeremy Greenberg (*Operants* correspondent in Hong Kong) reports: The 42nd annual convention of the Association for Behavior Analysis International (ABAI) was held over Memorial Day weekend in Chicago. There was a plethora of paper sessions, poster presentations, and panel discussions on everything related to applied behavior analysis (ABA). One such panel discussion was titled *The State of Science: A Closer Look at Dissemination* and featured *Operants* correspondents from four countries. Presenters (in order of appearance) were Ms. Bruna Colombo Dos Santos, PhD candidate from Federal University of Pará (UFPA/Brazil); Hui-Ting (Tina) Wang, PhD, Board Certified Behavior Analyst-D, Assistant Professor, Department of Special Education from National Taiwan Normal University; Shiri Ayvazo, PhD, Board Certified Behavior Analyst-D, Director of the Applied Behavior Analysis Program at David Yellin Academic College, Jerusalem, Israel and Lecturer, School of Education, Tel-Aviv University; and Jeremy H. Greenberg, PhD, Board Certified Behavior Analyst-D, Director of The Children's Institute of Hong Kong and Coordinator of Hong Kong Polytechnic University's Approved Course Sequence for Behavior Analysis.

We were quite the multicultural bunch, indeed, like a behavioral UN. The small size of the audience was likely a function of the unfortunate scheduled time of the event - late afternoon Tuesday on the last day of the conference. Nevertheless, valuable information was shared amongst the group, and we enjoyed hearing about the updates from all over the globe.

The purpose of the panel was to share the current state of affairs of the science and practice. Not only was this goal achieved but we also enjoyed hearing about some other facts and figures about these wonderfully diverse countries. First, we learned that in Brazil, behavior analysis could

be traced back to the introduction by Fred S. Keller in 1961 at the University of Sao Paulo. The science has grown to include programs in 7 of Brazil's 26 states. Programs span across various fields such as the theory and research of behavior, behavioral sciences, neurosciences and behavior, experimental psychology, as well as special education.

In Taiwan, in 1990, "behavior modification" — as it was called in those days — became a mandatory course for pre-service special education teacher training. Today, there are twenty board-certified practitioners, most of whom are in private practice, five in higher education, and zero in public schools. Some optimistic data were shared from a survey on elementary school special education teachers in Taipei: 72% of the teachers surveyed reported that they have read behavior analysis materials, and 65% reported the use of applied behavior analysis in teaching. However, 65% of the teachers polled had not attended behavior analytic training on a continued basis. Ongoing challenges in Taiwan include continued teacher education, limited resources, misunderstanding of the science, and culture difficulties.

Israel is a small nation of a little over eight million people, and the focus there is on applied behavior analysis therapy rather than experimental behavior analytic training or research. The first program was established in a teachers' college in the late 1980s. Since 2014, the two existing training programs were complemented by four additional programs. Across all programs, about 200 students per year graduate with 10% of those sitting for the Behavior Analysis Certification Board examination. We learned that there is only one book about applied behavior analysis in Hebrew. Israel has two professional organizations that run parallel to ABAI and APBA in the US. There is currently discussion in Israel about licensure issues in the field.

Applied Behavior Analysis came to Hong Kong most recently among the countries represented in the panel. In 2003, with the establishment of The Children's Institute of Hong Kong, the science was imported by a family of two children with autism and special educators from Teachers College in New York. In 2009 there were about 9 board certified behav-

ior analysts and that number has grown to about 36 today. The Hong Kong Association for Behavior Analysis was established in 2010 and by 2012 the first approved course sequence was established. This program is now housed at PolyU and enrolls between 20-30 new students annually. In its short history, modest but significant number of papers have been published in the educational research literature by



Hongkongers. Issues faced by this small region of about seven million in the South China Sea include the development of an infrastructure of significant volume to support student practicum placements as well as challenges of supply and demand.

In summary, there has been slow but steady growth in each of the four countries that were represented by the panel. It appeared as though each decade marked the establishment of the science in another country separated by continents and oceans. The panel discussion left the participants as well as the presenters with a positive outlook on the state of affairs and the future of our science. Although each country faced its own unique problems, all shared challenges in terms of continued growth and expansion of the science. We left the discussion confident that the future was bright, especially in the capable hands of professionals like those present at the ABAI conference on that day in Chicago.



Sheila Habarad, Dr. Julie S. Vargas, Steffi Schuldt, Matthew Pak, and Natalie Werner. Behind the camera - Suzanne Ward.

Natalie Werner (Operants correspondent in Germany) shared her story: On the third day of ABAI 2016 Convention in Chicago, my colleagues and I went for lunch. We grabbed one of the few tables outside, ordered food and waited to be served. To our surprise, Dr. Julie Vargas and Sheila Habarad appeared on the sidewalk behind us, looking for a table while carrying their food. I recognized Sheila — we had exchanged emails before; and of course we all knew Dr. Vargas. We had plenty of space and wondered whether we should invite them to our table, but hesitated, thinking such a celebrity, and at a fast food restaurant? After finally responding to this surreal stimulus combination, we invited them over to our table. We ended up having a great time talking about the future of *Operants*, English language idioms that are impossible to translate, Skinner's visits to Germany, and how frequently the B. F. Skinner Foundation gets asked to provide a picture of Skinner riding a camel. On our way back to the conference, Suzanne Ward commented: "You know, we just created a lifetime memory!" A very true statement, the rest of us agreed!



Shiri Ayyazo (Israel) writes: A number of people are involved in creating the fabulous magazine of the B. F. Skinner foundation, *Operants*. The ABAI 2016 conference provided us with a wonderful opportunity to get together. We all met on the 13th floor, in a hotel suite overlooking the marvelous navy pier for meet-and-greet. I was excited to meet talented behaviorists who support the foundation and dissemination of *Operants* voluntarily and with great passion. Correspondents come from all across the world: Mexico, Taiwan, Israel, Brazil, France, Germany, Hong Kong, Japan, Norway, Italy, Korea, Canada and USA. Such a wide dispersion of correspondents speaks to the expansion and extended reach of the B. F. Skinner Foundation to many readers worldwide. It was thrilling to listen to stories on how Skinner and his legacy exist and prevail in many countries; I will share a few with you.

- Two researchers from Brazil temporarily moved their

lives to Cambridge to research Skinner’s notes and other archival documents to complete their dissertation work—knowledge later imported into Brazil for future students.

- Taiwan has recently established the first training program in applied behavior analysis with faculty members making a dream the reality!
- Israel increased its *Operants* readership and assists many applied behavior analysts to become more familiar with Skinner and his legacy and groundbreaking scientific work.

Most inspiring was a conversation with Julie Vargas about some of her experiences and memories from her dad. The event distilled the understanding that all individuals involved in *Operants* share the same common ground—the aspiration to promote the behavioral science in our respective countries. 🌊



Professor Naohiro Kaneko – a Second-Generation Behavior Analyst in Japan



interview

Interview and English Translation by
Naoki Yamagishi, PhD



I had heard that you are the first and only behavior analyst in Japan who has a published paper in *Science*. It was based on your work in the United States. Could you tell us more about your stay in the U.S.?

I had several experiences of staying in the United States to conduct animal research. My first experience was at the American University. I worked with Dr. Burton M. Slotnick who is a bio-psychologist, and we studied olfactory discrimination learning of rats. We developed apparatus and procedures for rats but did need trial-and-error to accomplish the discriminative learning of fish. My collaborating work as an operant conditioner with him was very meaningful. The results of this research were published in *Science* in 1981.

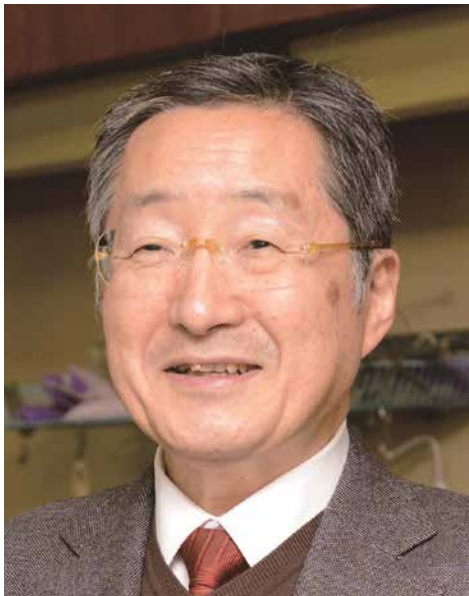
Next year, I worked at The Jackson Laboratory in Maine. It is famous not only as the world's first genetics laboratory working with mammals but also for being a supplier of mice. I worked with Dr. Wesley Whiten and Dr. Richard L. Sprott. I made a new lever that could be torqued with a weak force. It was accomplished by using a break-beam sensor.

Several years later, I spent twelve months at the University of Rochester Medical School. Dr. Bernard Weiss and Dr. Victor G. Laties took care of me. They are specialists in behavioral toxicology. One day, Vic invited me to a dinner with the *Journal of the Experimental Analysis of Behavior* editors. I found out that B.F. Skinner was in the group; I was very surprised, and it was a really good memory. Although Vic took a picture of us, his camera was stolen after the dinner. So, regrettably, I don't have my picture with Skinner.

One of your interests is designing operant chambers. Could you tell me about an apparatus you built recently?

I made a two-story Skinner box for a mouse. A sleeping bed for the mouse is on the ground floor, and the lever and feeder are on the upper floor. This is somewhat like Skinner's basement with the sleeping capsule. I would like to find the effect of a reinforcement schedule on a mouse's behavior. This was made to observe the whole behavior: 24 hours a day, seven days a week. This is behavior analysis based on sustained daily life.

What do you think about the relationship between basic research and applied practice?



Prof. Naohiro Kaneko

山岸: 金子先生のアメリカ滞在について話を聞かせていただけますか。金子先生は*Science*誌に論文が掲載された唯一の日本の行動分析家と伺っています。そしてそれはアメリカでの研究が元になっていると。

金子: 私は何度かアメリカに滞在して動物実験を行った経験があります。最初はアメリカン大学でした。そこで生物心理学者のDr. Burton M. Slotnickと一緒に、ラットを使っての記憶の実験を行いました。実験装置や手続きを開発するためには試行錯誤が必要でした。しかし、彼との協働研究はとても実りあるものでした。彼とのある研究が1981年に*Science*誌に掲載されました。

翌年はメイン州のJackson研究所に行きました。ここは世界初の哺乳類を使った遺伝学研究所で、マウスの生産・販売でも有名です。私はここで、弱い力で反応することができるレバーを開発しました。これはブレーク・ビーム・センサーによって可能になりました。

した。

3度目の渡米はUniversity of Rochester, Medical Schoolでした。Dr. Bernard Weiss とDr. Victor G. Latiesにお世話になりました。彼らは行動毒性学の専門家です。あるとき、VicはJEABの編集委員の夕食会に招待してくれました。私はそこにSkinnerが同席していてとても驚くと同時に、そのときのことは良い思い出になりました。Vicは私たちの写真を取ってくれたのですが、彼のカメラは夕食会の後、盗まれてしまいました。そんなわけで、私はSkinnerと一緒にとった写真を持っていないことを残念に思っています。

山岸: 金子先生は装置作りに興味があるように思います。最近お作りになった装置についてお話をいただけますか。

金子: 私はマウスのための2階建てのスキナーボックスを作りました。1階は寝室で、2階にレバーと給餌器があります。これはスリープ・カプセルのあるSkinnerの書斎みたいなものですね。マウスの行動に対する強化スケジュールの効果を明らかにしたいのです。私は、マウスの1日24時間、週7日の全体の行動を明らかにしたいのです。

山岸: 金子先生は基礎研究と応用的な実践の関係についてどのようにお考えですか。

金子: 私は最近、発達障害のお子さんに関わる仕事をしている人たちから相談を受ける機会が増えました。そこで、私は基礎的な動物実験とそれに関する専門用語の重要性を再度認識しました。シェイピングや弁別刺激といった概念は基礎的な動物実験をするさいに重要です。さらに子どもとその環境の関係を理解するのに必要です。もし子どもに関わる人たちと私たちが問題解決のための「共通言語」を持つならば、私たちは機能的なチームとして働くことができるでしょう。私は、最近基礎研究だけでなく応用

Recently, I was asked to give advice to people who are working with children with developmental disorders. Through talking with them, I realized again the importance of basic animal research and related technical terminology. Basic concepts, such as shaping or discriminative stimulus control, are critical to conducting basic animal experiments. These are also important to understand the relationship between children and surrounding circumstances. If we could have a “shared language” with the practitioners in the applied field, we can work as a functional team. I am honored for the recent change that expands my work from basic research to applied advising work.

You have mentioned a sleeping capsule in Skinner’s basement. Do you know the story behind it?

I am very interested in this sleeping capsule. It has a story. The sleeping capsule was sent to Skinner. It was set up in his basement study at his home. It was made in Japan. But we don’t know who made it and who sent it to Skinner. I thought that I might solve this riddle. During my attempt to solve the riddle, I learned much about the capsule. Mr. Kurokawa Kisho is a famous Japanese architect, who is the first man to devise a capsule apartment as a future living space to exhibit at Osaka Expo 1970. The Expo had connected Mr. Kurokawa and a sauna service company, which later made sleeping capsules for spectators.

I made an appointment with a staff member at Mr. Kurokawa’s office to ask for help in searching for a document about the sleeping capsule sent to Skinner. But the staff member could not find any document related to it. I also asked some staff members of the company, which have made sleeping capsules, for clues about the shipment of the capsule, but nothing was found either. After that, all I found was a company registered “SLEEP CAPSULE” as trademark in Japan. Consequently, I have sent an email to Dr. Julie Vargas to ask for any information about the sleeping capsule. I hope she could find and let me know some clue about the capsule.

If you could get some information about the capsule, would you search a hidden history of sleeping capsule in Japan?

Yes, I would. I think a company might have sent the capsule to ask Skinner for a comment about the capsule, and it wanted to use the comment as advertisement. If I can get information about the company’s name, I will interview the staff for more information. Dr. Sato, the former president of ABAI, and I had talked about a possible history of the Skinner’s sleeping capsule. It is not only my wish but also was one of Dr. Sato’s to explore the history. Furthermore, the history could be searched effectively only by an international network like *Operants*.

領域での相談に活動を広げるような、私の変化について光栄に思っています。

山岸：広報誌*Operants*の編集委員長Sheilaから金子先生の名前を聞きました。ある日本の教授がスリープ・カプセルに興味をもっているとのことでした。金子先生は、長い間スリープ・カプセルに興味をお持ちなのですか。

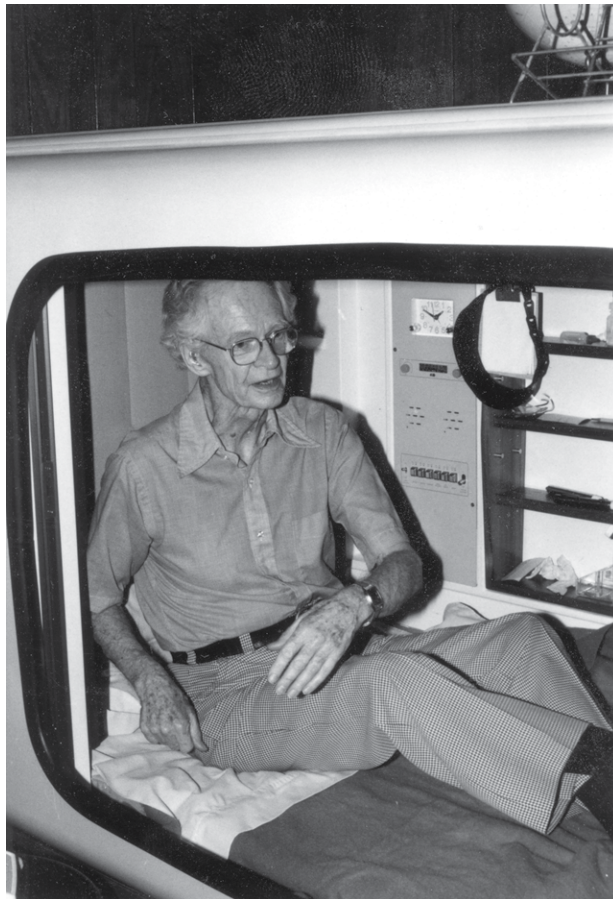
金子：そのとおりです。これには話がありまして、Skinnerの書斎にはスリープ・カプセルがありました。日本製です。しかし私たちはそれを誰が作って誰が送ったのか知りません。そこで私はこの謎を解き明かすことができるのではないかと考えました。そして、黒川紀章という日本の有名な建築家がカプセル住宅という未来の居住空間を1970年の大阪万博に出展したことがわかりました。そ

して大阪万博が黒川紀章とサウナ経営をしていた企業を引き合わせ、その企業がたくさんの見物客のためにカプセルホテルを作るようになったそうです。

そこで私は黒川紀章の事務所に連絡を取り、そのスタッフにスリープ・カプセルをSkinnerに送った記録があるかを尋ねました。しかしそのスタッフは当時のそのような記録を見つけることができませんでした。次に私はスリープ・カプセルを作っている企業に連絡を取りました。しかしそこでも手がかりを見つけることはできませんでした。だが、ある企業が「SLEEP CAPSULE」という商標登録をしていることだけわかりました。そのような訳で、最終的にDr. Julie Vargasにスリープ・カプセルのことを尋ねるメールを送りました。彼女がスリープ・カプセルの送付についての情報を見つけ、私に教えてもらえることを期待しています。

山岸：もしスリープ・カプセルの情報が入手できたら、日本でのその隠された歴史を明らかにしようと思いませんか。

金子：はい、そうですね。ある企業はきっとSkinnerにスリープ・カプセルを贈り、それについてコメントをしてもらって、そのコメントを広告に利用したかったのではないかと思います。その企業の名前がわかれば、私は当時を知るスタッフに話を聞きたいと思っています。ABAIの元会長である佐藤先生ともスリープ・カプセルについてのどんな歴史があったのかについて話をしていました。この歴史を明らかにすることは私だけの望みではなく、佐藤先生の希望でもあります。そして、この*Operants*のような国際的なネットワークによってのみこのような探求は可能なのだと思います。



B. F. Skinner demonstrates his Sleep Capsule.

Dr. Eduardo Cillo: FIFA World Cup and Olympics as an Opportunity



reflections

Translated by: Bruna Colombo dos Santos



Eduardo Cillo has a PhD in Experimental Psychology from the University of São Paulo. He has taught undergraduate and graduate courses in Psychology and Physical Education in several Brazilian universities. In 2016, he celebrated 20 years of experience as a sport psychologist, having worked with athletes and teams in various sports. Some outstanding work was performed in soccer teams like Botafogo (Rio de Janeiro), Sociedade Esportiva Palmeiras (São Paulo), and the Brazilian national futsal (indoor soccer) team. In 2012, he helped the futsal team win the World Cup in Thailand and, in 2016, he is in the technical committee that will compete in the world tournament in Colombia. Eduardo is from the city of São Paulo. He lived for eight years in Belo Horizonte and another 2 years in Rio de Janeiro, a fact that allowed him to experience the living conditions in the host city of the 2016 Olympic Games.



Dr. Eduardo Cillo

Eduardo Cillo é doutor em Psicologia Experimental pela Universidade de São Paulo. Foi professor de cursos de graduação e pós-graduação em Psicologia e Educação Física de diversas universidades brasileiras. Em 2016 ele completa 20 anos de atuação como psicólogo do esporte, tendo atuado com atletas e equipes de diversas modalidades esportivas. Alguns trabalhos de destaque foram realizados em times de futebol como o Botafogo (Rio de Janeiro), a Sociedade Esportiva Palmeiras (São Paulo) e a Seleção Brasileira de Futsal. Em 2012 ajudou a Seleção de Futsal a conquistar o título da Copa do Mundo na Tailândia e, em 2016, está na comissão técnica que disputará o torneio mundial na Colômbia. Natural da cidade de São Paulo, morou por 8 anos em Belo Horizonte e outros 2 anos no Rio de Janeiro, o que lhe permitiu experienciar as condições de vida na cidade sede dos Jogos Olímpicos de 2016.

As soon as Brazil won the right to host the FIFA (Fédération Internationale de Football Association) World Cup and the Olympics, the first word that I thought of was “opportunity”. Obviously this was a chance for the Brazilian sport to get a big boost and start to be treated in serious and respectful way by our society. It was the moment that many athletes and sport professionals waited for, some of them for all their lives. It was a great opportunity to make investments in infrastructure and training. It was the golden chance to significantly change the Brazilians’ relationship with sports and physical activity. It was also the moment to take advantage of the exposure and influx of investments to tackle serious social problems in Brazil.

Sports facilities, urban mobility, and environmental problems

The experiences of other cities that hosted recent Olympic Games, such as London, Beijing, Athens, and Sydney show that massive investment of public money produces, at best, questionable results when we consider how the specially constructed buildings will be used for sports events or as an incentive to practice physical activity. Preparation for the Games did little for the construction of new roads, for urban development, and for solving environmental issues.

Logo que o Brasil conquistou o direito de receber a Copa do Mundo de Futebol e os Jogos Olímpicos, em tão curto espaço de tempo, a primeira palavra na qual pensei foi “oportunidade”. Obviamente esta era a grande chance para que o esporte brasileiro ganhasse um grande impulso e passasse a ser tratado de maneira séria e respeitosa pela nossa própria sociedade. Este foi o momento pelo qual tantos atletas e profissionais do esporte aguardaram. Alguns durante todas as suas vidas. Seria esta a grande oportunidade para que fossem realizados investimentos em estrutura e capacitação profissional, categorias de formação e treinamento esportivo. Era a chance de ouro para modificar significativamente a relação do brasileiro com esporte e atividade física. Era, também, o momento para aproveitar a exposição e os investimentos para atacar graves problemas sociais no Brasil.

Estruturas esportivas, mobilidade urbana e problemas ambientais

As experiências das sedes de outras edições recentes dos Jogos Olímpicos como Londres, Pequim, Atenas e Sydney mostram que, além de grandes investimentos com dinheiro público, os legados estruturais para uso em eventos esportivos ou incentivo para a prática de atividade física, assim como obras viárias, urbanísticas e ambientais foram no mínimo questionáveis. A própria experiência recente do Brasil com os Jogos Panamericanos de 2007 e a

Brazil's recent experience with Pan-American Games in 2007 and the FIFA World Cup in 2014 already showed how short-lived these results can be. Very few structures built for the Pan-American Games were used for the Olympics in Rio. One of the main arenas built in 2007, and used in the summer of 2016, was the *Olympic Stadium Joao Havelange*, in the neighborhood *Engenho de Dentro*. In 2013, just six years after the completion of this building, the stadium needed major repairs because of problems with its roof. The work took almost two years before the stadium could be cleared for major use by the *Botafogo de Futebol e Regatas* soccer club and, a few months later, in 2015, the stadium had to be closed again for the new round of repairs for the Olympics. Other sports venues in Rio are almost all new. The model chosen for the construction of some of these structures hardly benefits the majority of people who live in Rio: Built with resources of big construction companies, they will be commercially exploited by them for many years, as in case of athletes' village, which will become a luxury condominium complex.

The experience of the FIFA World Cup should have served as a lesson: Out of twelve arenas built or repaired in 2014, eight have been systematically losing money. We need to note that a large number of construction projects that involved airports, roads and other urban infrastructure scheduled for delivery before the World Cup remain unfinished today.

In Rio de Janeiro, part of the commitments made by the government, in addition to sports venues and roads, were directed at resolving environmental issues. An ambitious plan called for a drastic cleanup of the Guanabara Bay. Just before the start of the Games it became clear that no significant changes were made. Similarly, pollution in other places like Copacabana beach, remains a serious public health problem, as well as excess traffic, deficiencies of public transportation, alarming levels of crime and violence in metropolitan areas, and other factors. Besides the immediate concern about athletes and tourists that were exposed to these problems, the major concern should have been with the local population that will keep suffering after the Olympics.

Physical activity, sedentary lifestyle, and obesity in Brazil

The Olympic Charter is a document adopted and published by the International Olympic Committee to guide the organization and implementation of each Game. Since 2002, this document includes the concept of "legacy", alluding to alleged positive social impact on the host cities. A part of this legacy includes the expectation of increasing the number of physically active people. But even in countries with stable economies any behavioral effect of frequency in the increase in physical activity by the population in general was fleeting. The organizing committee of the 2012 Games in London set the optimistic target of 2 million new regular physical activities practitioners. The real effect was more modest: about 100,000 new temporary practitioners.

Certainly, there are complex social questions that

Copa do Mundo de Futebol em 2014 já mostram o quão passageiros podem ser tais efeitos. Muito poucas estruturas dos Jogos Pan-americanos foram aproveitadas para os Jogos Olímpicos do Rio. Uma das principais construções erguidas para 2007, e que seria aproveitada em 2016, foi o Estádio Olímpico João Havelange, no bairro do Engenho de Dentro. Em 2013, apenas 6 anos depois da entrega da obra, o estádio precisou ser interditado por problemas na sua cobertura. Foram quase dois anos de obras até que o estádio fosse liberado para o uso majoritário do Botafogo de Futebol e Regatas e, poucos meses depois em 2015, o estádio precisou ser novamente interditado para novas obras de adequação para os Jogos Olímpicos. As outras estruturas esportivas dos jogos no Rio são quase todas novas. O modelo escolhido para construção de algumas destas estruturas dificilmente irá beneficiar a maioria da população carioca: erguidas com recursos de grandes empreiteiras serão exploradas comercialmente pelas mesmas por muitos e muitos anos, como no caso da Vila dos Atletas que será convertido em um condomínio de luxo.

A experiência da Copa do Mundo parece não ter servido de lição: dos 12 estádios construídos ou reformados em 2014, 8 tem dado prejuízo sistematicamente. Temos ainda que observar o grande número de obras em aeroportos, vias e outras estruturas urbanas que estavam programadas para entrega antes da Copa do Mundo, mas que até hoje permanecem inacabadas.

No Rio de Janeiro, como parte dos compromissos assumidos pelo poder público, além das estruturas esportivas e viárias, uma grande preocupação esteve direcionada para questões ambientais. Uma ambiciosa meta previa despoluir drasticamente a Baía da Guanabara. As vésperas do início dos jogos nenhuma mudança significativa foi realizada. Do mesmo modo a poluição em outros locais, como a praia de Copacabana, continua sendo um grave problema de saúde pública, assim como o excesso de tráfego, a deficiência no transporte público, os níveis alarmantes de criminalidade e violência por toda a região metropolitana e outros. Além da preocupação imediata com atletas e turistas que venham se expor a todos estes problemas, a preocupação maior deveria ser com a população local que sofre e, provavelmente, continuará sofrendo após a realização das Olimpíadas.

Atividade física, sedentarismo e obesidade no Brasil

A Carta Olímpica é um documento adotado e divulgado pelo Comitê Olímpico Internacional, com o objetivo de orientar a organização e realização de cada edição dos Jogos Olímpicos. Em 2002 tal documento passou a contar com o conceito de "legado", em alusão a supostos impactos sociais positivos para as cidades sede. Uma parte deste legado contempla a expectativa do aumento do número de praticantes de atividade física. Porém, mesmo em países com economias estáveis o efeito comportamental de aumento na frequência de atividade física pela população em geral foi fugaz. A organização local dos jogos de Londres, em 2012, estabeleceu a otimista meta de 2 milhões de novos praticantes de atividade física regular. O efeito real foi bem mais modesto: cerca de 100.000 novos praticantes temporários.

Certamente se tratam de questões sociais complexas as quais variam de um país para outro, e que exigem análise caso a caso. Porém, temos evidências mais do que suficientes para refletir sobre a crença de que a simples realização de uma edição de eventos esportivos de grande porte, em um país, é suficiente para produzir uma mudança cultural significativa nas práticas espor-

vary from one country to another and demand analysis on a case-by-case basis. However, we have more than enough evidence to reflect on the belief that merely holding a large sports events in a country will be enough to produce a significant cultural change in sports and fitness activity, and quality of life in general for people living in host cities.

In Brazil, some numbers are troubling. Very troubling. Recent numbers from a survey commissioned by the Sports Ministry in 2015, revealed that 46% of the Brazilian population between 14 and 75 years of age do not practice any kind of regular physical activity. At the same time, the World Health Organization affirms that more than half of Brazilians are overweight. Obesity and sedentary lifestyle represent a great risk to health and the quality of life.

Obviously, we cannot attribute these social problems to internal causes or even to what could be an epidemic of laziness and gluttony of Brazilian people. It is essential to evaluate the past and present contingencies in control of the behavior of many people at the same time. In general, the Western lifestyle, especially in metropolitan areas, favors a sedentary lifestyle and increased body weight. There is a necessity to include in our daily routines some programmed physical activity. This function is accomplished in part by gyms and in part by social sports clubs. But like so many important behavioral repertoires, the availability of favorable situations should occur from childhood, and as a great part of Brazilian population can not afford to enroll their children in gyms or bear the expenses of a club, the responsibility is left to schools. And that's where we have a number of important and enlightening questions about the control of contingencies of Brazilians' behavior.

School sport and high performance sport

In a study on sport and physical activity in Brazilian schools commissioned by the United Nations Development Program, to be published at the end of 2016, some data drew my attention. On average, schools provide just 2 hours of physical activity per week through physical education classes. These classes are taught by trained physical education teachers in just half of public schools. Only 40% of schools offer physical extra-curricular activity, and those that do provide it for a meager two hours per week. Even with the enormous popularity of soccer in Brazil, just 13% of schools have a suitable practice field. These data show the precariousness of the general conditions that are offered to children and teenagers. It is easy to assume that these conditions are unfavorable for generating repertoires of systematic practice of physical activity on a large scale.

At the same time, we can reflect on the investment policy of the Brazilian government in the context of the Olympics. Ignoring the "legacy" predicted by Olympic Charter, the federal government, aligned with the Brazilian Olympic Committee, invested 3.5 billion reais (approximately \$1.1 billion USD) in material and human resources directed to performance improvement of Brazilian athletes. The goal was to be in the top 10 in medal count in the Olympics and in the top 5 in the Paralympic Games.

The commitments were made in documents and

tivas e de atividade física, e na qualidade de vida em geral das populações residentes nas cidades que sediaram tais eventos.

No caso do Brasil alguns números preocupam. E muito. Números recentes de uma pesquisa encomendada pelo Ministério do Esporte, em 2015, revelaram que 46% da população brasileira, entre 14 e 75 anos de idade, não praticam nenhuma atividade física regular. Ao mesmo tempo a Organização Mundial da Saúde afirma que mais da metade dos brasileiros estão com sobrepeso. Sobrepeso e sedentarismo associados representam um grande risco a saúde e qualidade de vida.

Obviamente não podemos atribuir tais problemas sociais a causas internas ou mesmo ao que poderia ser uma epidemia de preguiça e gulodice do povo brasileiro. É fundamental avaliar as contingências passadas e presentes no controle do comportamento de tantas pessoas ao mesmo tempo. De um modo geral o estilo de vida ocidental, principalmente em regiões metropolitanas, favorece o sedentarismo e o aumento de peso corporal. Cria-se aí a necessidade de incluir em nossas rotinas diárias atividades físicas programadas, função esta que é cumprida em parte por academias e clubes sociais esportivos. Porém, como tantos repertórios comportamentais importantes, a disponibilidade de situações favoráveis deve ocorrer desde a infância. Como grande parte da população brasileira não tem condições financeiras de matricular seus filhos em academias ou arcar com as despesas de um clube, fica a responsabilidade para as escolas. E é aí que temos um conjunto de problemas importantes e esclarecedores acerca das contingências de controle do comportamento dos brasileiros.

Esporte escolar e esporte de alto rendimento

Em pesquisa encomendada, a ser publicada no final de 2016, pelo Programa das Nações Unidas para o Desenvolvimento, acerca do esporte e atividade física nas escolas brasileiras alguns dados chamam a atenção: em média as escolas oferecem apenas 2 horas por semana para aulas de educação física; estas aulas são ministradas por professores de educação física em apenas metade das escolas públicas; somente 40% das escolas oferecem algum tipo de atividade extra curricular, e ainda assim as que oferecem disponibilizam poucas horas por semana; mesmo com a enorme popularidade do futebol no Brasil só em 13% das escolas há campo para a prática da modalidade. Estes dados mostram a precariedade das condições gerais que são oferecidas as crianças e adolescentes. É fácil supor que se tratam de condições desfavoráveis para gerar repertórios de prática sistemática de atividade física em larga escala.

Em paralelo podemos refletir acerca da política de investimentos do poder público brasileiro no contexto da realização dos Jogos Olímpicos. Ignorando o "legado" previsto da Carta Olímpica o Governo Federal, alinhado com o Comitê Olímpico Brasileiro, investiu 3,5 bilhões de reais em recursos materiais e humanos direcionados para a melhora de desempenho de atletas brasileiros. A meta principal é conseguir ficar entre os 10 melhores países no quadro de medalhas das Olimpíadas e entre os 5 mais bem colocados nas Paralimpíadas.

Os compromissos assumidos em documentos e discursos públicos quando da candidatura e, posteriormente, da conquista do direito/obrigação de sediar os Jogos Olímpicos criaram expectativas tanto em relação ao desempenho dos atletas

public speeches when Brazil was a candidate and, later, after winning the right and the obligation to host the Olympics. They created expectations both for the increased performance of elite athletes and the improvement of living conditions for ordinary citizens. In reality, we ended up only seeing investments in elite sports. Some would say: "But athletes and sport professionals deserve this opportunity!" Of course they do! Personally, I cannot complain. And I know that I speak on behalf of many other sport psychologists and professionals in other fields of sports science that experienced a great media exposition, and a large increase (temporary) in demand for our services. The problem is more complex.

The culture of gain and loss of opportunities

The lack of concern about the relevant social issues and investment in them is a fact, but it is not surprising. It became a lost opportunity to remedy or, at least, diminish serious social problems that ordinary citizens face daily. Was the

construction of Line 4 of Rio de Janeiro's subway important? Of course it was! It can save many hours for those who spend a lot of time in traffic along the river, whether in their cars or on buses and trains. But let's look back. In preparation for Athens Olympics in 2004, urban mobility was

significantly improved, but other items related to the quality of life in general did not improve or, in some cases, declined. Based on the example of Greece, the extra line of Rio de Janeiro's subway will do little for the many other urban problems mentioned before. And the impact on the sedentary lifestyle and accumulation of fat will be practically null. With that, Rio will continue to look for precarious public health services to treat the diseases generated by this lifestyle. An average Brazilian watched the Olympic Games on his TV, while consuming sodas and alcoholic beverages of low quality, between the bites of fast-food chain products. But he was shouting: "Go Brazil!" I hope that the emotions of sports victories and disappointments will not become one more factor in the clogging of his arteries.

The loss of opportunity needs to generate discomfort. We cannot simply ignore what we are letting get away.

de elite quanto a melhoria das condições de vida dos cidadãos comuns. Na prática acabamos nos deparando somente com o investimento no esporte de alto rendimento. Alguém poderia questionar este raciocínio: "Mas atletas e profissionais do esporte não merecem esta oportunidade?". Claro que sim! Pessoalmente não posso me queixar. E sei que falo em nome de outros tantos psicólogos do esporte e profissionais de outras áreas das ciências do esporte que tem experimentado uma grande exposição na mídia, e enorme aumento (passageiro) na procura pelos nossos serviços. O buraco é mais embaixo.

A cultura do ganho e da perda de oportunidades

O fato questionável, mas não surpreendente, é a falta de preocupação e investimento em questões sociais relevantes. É a perda da oportunidade de sanar ou, ao menos, diminuir graves problemas sociais que os cidadãos comuns enfrentam no seu cotidiano. A construção da linha 4 do metrô carioca é importante? Certamente que é! Pode poupar muitas horas da vida daqueles que gastam tempo demais em engarrafamentos no trânsito do

Rio, seja em seus automóveis particulares ou nos ônibus e trens. No exemplo das Olimpíadas de Atenas em 2004 a mobilidade urbana foi significativamente melhorada, mas outros tantos itens relativos a qualidade de vida em geral não melhoraram ou decaíram. Como no exemplo grego a linha extra do metrô carioca será pouco para os outros tantos problemas urbanos já mencionados anteriormente. E o



Rio Olympics opening ceremony

impacto no estilo de vida sedentário e de acúmulo de gordura será praticamente nulo. Ou seja, o carioca continuará precisando procurar os precários serviços de saúde pública para tratar das enfermidades geradas a partir deste estilo de vida. O brasileiro comum irá assistir aos Jogos Olímpicos na sua televisão, enquanto consome refrigerantes e bebidas alcoólicas de baixa qualidade, entre uma mordida e outra de lanches de redes de fast food. Mas vai poder gritar: "Vai Brasil!". Tomara que a emoção das disputas esportivas não seja mais um fator para o entupimento de suas artérias...

A perda da oportunidade precisa gerar desconforto. Não podemos simplesmente ignorar o que estamos deixando passar. Aparentemente vamos deixar passar mais uma chance para encarar algumas das mazelas de nosso país, enquanto nos vangloriamos da nossa geografia privilegiada, das belezas estéticas do nosso povo tão exploradas no carnaval, do nosso passado de glórias no futebol (mesmo que agora esteja instalada uma grande

It appears that we passed another chance to face some problems of our country, while we boast about our privileged geography, the esthetical beauty of our people so explored in carnival, our past glories in soccer (even with the great identity crisis suffered due to the monumental failure in the latest World Cup), and our “Brazilian way.” Honestly? This is the worst of our culture. We tend to believe that we can always solve all daily problems at the last moment. It is true that we can often solve them because we are used to working that way and our whole culture is intertwined in this way. The mythical character of Zé Carioca (Joe Carioca or José Carioca in the United States) from Walt Disney since the 1940s represents our traditional way of life: work little and receive great rewards. The “Gerson Law” (a common statement of a major Brazil soccer player in 1970 World Cup) combines and complements this style of behavior: “The important thing is to take advantage of everything, right?”

In summary, the most frequent cultural practices in Brazil value the control of behavior by immediate consequences, practically ignoring the long-term effects. These practices encourage us to take advantage of opportunities for the “self” and ignore the cumulative effects of neglecting the needs of the large common population. It is not surprising that corruption is so wide-spread among politicians and all layers of Brazilian society. No wonder we lost the opportunity to produce significant social changes from these two important sports events. We cannot perceive sport as an opportunity for social transformation. At the end, it was “more of the same”: “Look, there is a chance to do well.”

crise de identidade pelo fracasso homérico na Copa do Mundo) e do nosso “jeitinho brasileiro”... Sinceramente? O pior da nossa cultura. Tendemos a acreditar que sempre poderemos resolver os problemas do dia a dia na última hora. É bem verdade que muitas vezes conseguimos resolvê-los porque estamos acostumados a funcionar dessa maneira e toda a nossa cultura está entrelaçada deste modo. A figura mítica do Zé Carioca (Joe Carioca ou Joseph Carioca nos E.U.A.), de Walt Disney, já representava desde os anos 1940 a cultura do nosso modo de vida tradicional: trabalhar pouco e obter grandes recompensas. A chamada “Lei de Gerson” (bordão de um importante jogador da Seleção Brasileira de Futebol da Copa do Mundo de 1970) combina e complementa este estilo de comportamento: “O importante é levar vantagem em tudo, certo?”.

Em síntese, as práticas culturais mais frequentes no Brasil valorizam o controle do comportamento por consequências imediatas, praticamente ignorando os termos de longo prazo, incentivam o aproveitamento de oportunidades pelo “eu” e ignoram os efeitos cumulativos da negligência as necessidades da população comum e numerosa. Não é de se admirar que a corrupção seja tão frequente entre os políticos e mesmo nas entranhas de quaisquer camadas da sociedade brasileira. Não a toa perdemos a oportunidade de produzir mudanças sociais significativas a partir destes dois enormes eventos esportivos. Não conseguimos perceber o esporte como oportunidade para transformação social. Foi “mais do mesmo”: “Olha aí a chance de me dar bem”.



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Dr. Cristiana Scala: Behavior Analysis and Sports

profile



Interview: Bruna Colombo dos Santos
Translation: André Saconatto



Dr. Cristiana Scala has worked as a sport psychologist and coach for 25 years, developing high performance teams and athletes. She worked with more than 250 athletes from a wide range of sports. Cristiana has master's and doctoral degrees from the University of São Paulo. During her academic career, she did sports-related research on focus and "mental" training. From that experience, she developed high-performance programs for athletes and later adapted them for business people and corporate leaders. Dr. Scala has published several scientific papers in Brazilian journals, such as Revista Brasileira de Terapia Comportamental e Cognitiva. She is an author of several books published in Brazil and internationally.



Dr. Cristiana Scala

Cristiana trabalha como psicóloga do esporte e coach há 25 anos, desenvolvendo atletas e equipes de alto rendimento. Em sua carreira, pesquisou e defendeu teses em esportes, abordando concentração e treino mental. A partir dessa experiência, criou programas de desenvolvimento de alta performance para atletas, e os adaptou para profissionais de empresas e líderes. Doutora e Mestre em Psicologia pela USP. Psicóloga de atletas profissionais com participações e medalhas em mundiais e olimpíadas. Psicóloga da Seleção Brasileira de Atletismo. Experiência com mais de 250 atletas em diversas modalidades esportivas. Experiência em Coaching Executivo e Coaching de Carreira. Autora de trabalhos científicos publicados em revistas nacionais, como Revista Brasileira de Terapia Comportamental e Cognitiva. Participação como autora de livros nacionais e internacionais.

Tell us about your academic training and how you got interested in behavior analysis?

I got my psychology degree from the Pontifical Catholic University of São Paulo (PUC-SP). My behavior analysis professor, Roberto Banaco, awakened my interest with his questions. When I started to work with sports, it was in behavior analysis where I found the best solutions and answers for my questions regarding performance improvement. Then, I went to the Experimental Psychology department at the University of São Paulo (USP), where I got my master's and doctoral degrees, doing research in the field of sport psychology.

When did you see the connection between behavior analysis and sports?

As soon as I started working with sports, I clearly saw how behavior analysis concepts fitted and how they could help me at work. From that moment on, I felt a need to improve my knowledge and implement these concepts in sports practice, as clearly as possible, to show the effect they can have on athletes' performance. One topic that fascinated me and that I used in the athlete's training routine was covert practice. Working on my master's degree, I wanted to verify what I saw in my practical work and find a way to provide a systematic account for the techniques which improved athletic performance. My master's thesis was about covert behavior and speed increase. In my doctoral dissertation, I worked on covert practice and focus. As a professor and advisor for undergraduate students, I developed, among other themes, a series of works which involved co-

Conte-nos como foi sua formação, como você se interessou por Análise do Com-

portamento?

Sou formada em psicologia pela PUC-SP. Meu professor de análise do comportamento Roberto Banaco, despertou meu interesse com suas indagações. Quando fui trabalhar com esportes, foi na análise do comportamento que encontrei melhores alternativas e soluções para minhas questões em relação à melhora de performance. Fui então para o departamento de Psicologia Experimental da USP, onde fiz meu mestrado e doutorado, com pesquisas voltadas para a Psicologia do Esporte.

Quando você se interessou pela interface entre Análise do Comportamento e Esportes?

Assim que fui trabalhar com esportes, vi claramente como os conceitos da Análise do Comportamento se encaixavam e podiam me auxiliar no trabalho. A partir daí, senti necessidade de aprofundar meus conhecimentos e trazer os conceitos para a prática do esporte, de uma maneira mais clara, que mostrasse o efeito no desempenho do atleta. Um dos temas que me fascinava e que eu usava na rotina de treino com os atletas era prática encoberta. Fui então para o mestrado, verificar o que eu via acontecer na prática e buscar uma maneira de sistematizar estas técnicas que incrementavam o rendimento. Minha dissertação foi sobre comportamento encoberto e a melhora de velocidade. No doutorado trabalhei com prática encoberta e concentração. Como professora e orientadora de TCCs, fiz uma série de trabalhos que envolviam prática encoberta em diferen-

vert practice in several sports, and research on rules and instruction for focus improvement.

For more than 20 years now, you have worked as a sport psychologist with high performance athletes. Some of them won medals and championships for Brazil many times. Tell us about this work.

My career started through a friend's invitation. He was a tennis coach and worked with teenage players. It was then when I fell in love with the field of sport psychology. Although in Brazil, more than 20 years ago, sports psychology was just starting. A lot of times coaches didn't even know about the work done by sport psychologists and misinterpreted our work as being the same as therapy. This misinterpretation produced some reluctance to hire a psychologist by the coaches and, even more so, by sport clubs. However, many athletes realized the need for more self-control during competitions. In order to meet that demand, I started to work directly with athletes and developed performance programs with determined duration and value.

In those programs, I work on several aspects of repeating situations in sports, teaching an athlete specific techniques for anxiety control, focus, and establishing performance goals.

At the end of program, the athlete is ready to go on by him- or herself. As I was working, I reached many different kinds of athletes, and developed a network of clients, which led me to the high-performance sports.

I worked with pilots of Formula One racing cars and stock-car drivers, professional tennis players, and track-and-field athletes. Among them is Maurren Maggi, who won the gold Olympic gold medal in Beijing in the long jump, and other athletes who won medals in national and international championships.

What are your current professional interests?

I still work with performance programs, which I consider to be very efficient and most viable to our reality. I have a very diverse network of clients. I'm a psychologist at the Long Jump National Center (track-and-field). I'm also involved with the multidisciplinary high-performance team of the Brazilian Track-and-Field Federation.

In addition to that, my program led me to work as a coach for business people who seek high-performance professional development.

tes esportes, pesquisas sobre regras e instruções para melhora de concentração, entre outros.

Você trabalha como psicóloga do esporte há mais de 20 anos, e com atletas de alta performance que muitas vezes trouxeram medalhas e títulos para Brasil. Conte-nos sobre sua história de trabalho nessa área.

Comecei a trabalhar com tenistas infanto-juvenis a convite de um amigo, professor de tênis e me apaixonei por Psicologia do Esporte. No Brasil, porém, há mais de 20 anos, esta era uma área que estava só começando e muitas vezes os treinadores nem conheciam o trabalho que era realizado pelos psicólogos do esporte, confundindo com o trabalho terapêutico. Isto gerava certa resistência por parte deles e principalmente dos clubes, em contratar um psicólogo. Muitos atletas, no entanto, percebiam a necessidade de ter mais autocontrole durante as competições.

Para poder atender esta demanda, resolvi tratar diretamente com os atletas e desenvolvi programas de performance com tempo e valor determinado.

Nesses programas trabalho diversos aspectos da situação esportiva, ensinando ao atleta técnicas específicas de controle de ansiedade, concentração, estabelecimento de metas para desempenho, entre outras. Ao fim do programa o atleta está pronto para caminhar sozinho, uma vez que as situações esportivas tendem a se repetir.

Dessa maneira, consegui atingir diferentes atletas e fui formando



Maurren Maggi

uma rede de clientes, que acabou me levando para o alto rendimento.

Trabalhei com pilotos da fórmula1 e stock car, tenistas profissionais e equipes de atletismo, entre eles a Maurren Maggi, medalha de ouro nas Olimpíadas de Pequim, além de vários atletas com medalhas em mundiais e competições nacionais e internacionais.

Atualmente, como é sua prática?

Atualmente continuo trabalhando com programas de performance, que considero extremamente eficientes e ainda os mais viáveis para a nossa realidade. Tenho uma rede de clientes bem diversificada. Sou psicóloga do Centro nacional de Saltos Horizontais (Atletismo) e estou ligada à Equipe Multidisciplinar de Alto rendimento da Confederação Brasileira de Atletismo.

Além disto, nos últimos anos, o programa acabou me levando a trabalhar como Coach para executivos que queriam desenvolvimento profissional de alta performance.

Quais as principais dificuldades ou desafios que você enfrenta na sua prática?

What are the main difficulties or challenges you face in your work?

The main difficulty is a psychologist's place in sports. Although it exists, and there is awareness of the importance of an emotional component in athletes' performance, there is still some reluctance. In part, the blame is on the professionals who are not prepared, and end up making mistakes that put the area in a bad position. There are few of those, but they still exist. And in part, the blame is on Brazilian sport realities — many aspects of sports need investments and sometimes there is not any money left for psychology.

What tips would you like to give to behavior analysis students interested in sports-related careers?

First of all, study. A good start is the book *Sport Psychology Consulting: Practical Guidelines From Behavior Analysis* by Garry Martin. Another point that I consider important for the psychologist is to understand that the coach is the main figure on any technical team. Psychologists should see coaches as partners — always listen, respect, and add your work to what already exists, never confront. If you have any questions — ask. If the coach wants to hear — talk to him/her and give some advice regarding athletes. You are a member of the team with a certain place. If you invade, go beyond from what concerns you, it will make you lose your work.

How do you see both research and application development of behavior analysis in Brazilian sports?

Since I started, it has grown a lot, but it is small if compared to others fields. Sport psychology is relatively new, so there is a lot to be developed. As long as you love sports and want to live inside that universe — being at a sport court, on the track, or in the swimming pool — sport psychology is a fascinating field. The work happens in those places — during training, next to the coach, and the whole technical team. Performance is always the focus. Athletes want a psychologist for a single reason — to help them win. 🏆

A grande dificuldade ainda é o espaço do psicólogo. Embora exista, e se conheça a necessidade de um trabalho emocional, ainda há resistência. Um pouco pelos profissionais, que por não estarem devidamente preparados, cometem erros que depõem contra a área (isto já diminuiu, mas ainda existe) e um pouco pela realidade do esporte brasileiro, que precisa investir em muitas coisas e por vezes não tem verba suficiente para a psicologia.

Que dicas você gostaria de dar para estudantes que se interessam em trabalhar com a interface Análise do Comportamento e Esportes?

Antes de mais nada, estudar. Um bom começo é o livro *Sport Psychology Consulting: Practical Guidelines From Behavior Analysis* do Garry Martin.

Outro ponto que considero importante é o psicólogo entender que o treinador é a figura principal da equipe técnica. O psicólogo vem como um parceiro, mas sempre escutando, respeitando e agregando o seu trabalho ao que já existe, jamais confrontando. Se você tem dúvidas, converse com o treinador e até o oriente a respeito dos atletas, desde que ele queira ouvir. Você é mais uma peça, querer invadir, ir além do que te diz respeito, fará com que perca seu espaço.

Como você vê o desenvolvimento da pesquisa e também da aplicação da Análise do Comportamento relacionada à prática esportiva no Brasil?

Desde que eu comecei cresceu muito, mas ainda é tímida se comparada com as outras áreas. A Psicologia do Esporte é relativamente nova, então têm muito a se desenvolver. Psicologia do Esporte é uma área fascinante, desde que você ame esportes e esteja disposto a viver neste universo, seja uma quadra, pista de atletismo, piscina, autódromo, etc. É lá que o trabalho acontece, durante o treinamento dos atletas, ao lado dos treinadores e de toda equipe técnica. O foco sempre é o rendimento. É para isto que eles querem o psicólogo lá, para que o ajudem a vencer. 🏆



Behavioral Psychology in Sports and Training of Professionals for the Field



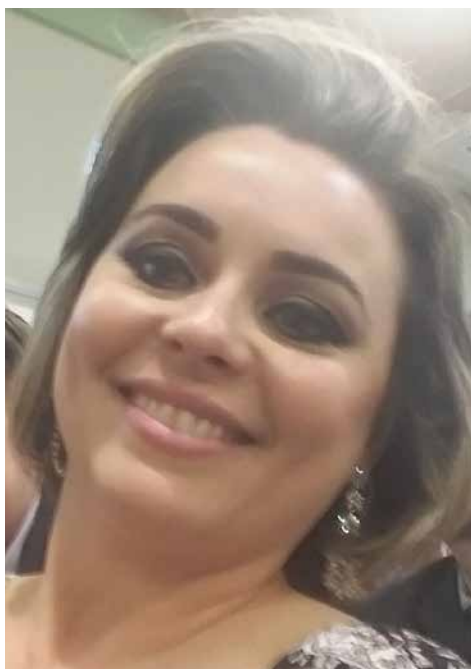
reflections

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Dr. Silvia Regina de Souza

In the summer of 2016, for the first time, Brazil hosted the Olympic and Paralympic Games. Over 13,000 athletes from more than 200 countries competed for medals in 42 sports in the Olympics and 23 sports in the Paralympics (<http://www.rio2016.com>). An event of such magnitude incites professionals from different fields to discuss, among other topics, the preparation of athletes. Athletes and coaches point out, increasingly, the importance of “psychological” readiness and, therefore, the sport psychologists’

work. That raises an important question: Where are Brazilian psychologists, including behavior analysts who wish to work in the sporting context, coming from? Have undergraduate courses prepared students for work in this field? We know that few institutions have sport psychology in their curriculum, and when they have, in general the discipline is offered as an option. If this course is not offered as an undergraduate discipline, where would professionals who are interested in this field obtain their knowledge? What are the implications of the lack of this discipline in the curriculum of undergraduate courses in psychology? I do not intend to answer all these questions in one article, but initiating the discussion is important in order to rethink the sport psychology development in Brazil. First, however, I would like to introduce a reader to this field.

Sport psychology can be defined as a study of the behavior of people involved in sports and the application

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Em 2016 o Brasil sediará, pela primeira vez, os Jogos Olímpicos e Paralímpicos. Ao todo serão mais de 13.000 atletas, de mais de 200 países, que disputarão medalhas em 42 modalidades esportivas nos Jogos Olímpicos e 23 nos Paralímpicos (<http://www.rio2016.com>). Um evento de tamanha expressão incita profissionais de diferentes áreas a discutirem, entre outros temas, a preparação dos atletas. Quando o tema é esse, os relatos de atletas e treinadores ressaltam, cada vez mais, a importância dos aspectos “psicológicos” e, consequentemente, do trabalho do

psicólogo do esporte. Isso levanta questões importantes: Como tem sido a formação de psicólogos brasileiros, analistas do comportamento ou não, que desejam atuar no contexto esportivo? Os cursos de graduação têm preparado os alunos para atuar nesse campo? Sabemos que poucas instituições têm, na sua grade curricular, a disciplina Psicologia do Esporte, e quando a têm, em geral, a disciplina é oferecida como uma opcional. Se essa disciplina não é ofertada nos cursos de graduação, onde os profissionais, que se interessam por esse campo de atuação, têm buscado (in)formação nessa área? Quais as implicações da inexistência dessa disciplina na grade curricular dos cursos de graduação em Psicologia? Nesse texto, até mesmo por uma questão de espaço, não pretendo exaurir as discussões que cada uma dessas questões pode suscitar, mas entendo que iniciá-las é importante para que possamos continuar a repensar os rumos da Psicologia do Esporte no Brasil. Antes, porém, gostaria de apresentar ao leitor um pouco da atuação do psicó-

of knowledge gained through this study. The discipline began with the research of reaction time conducted in experimental psychology laboratories. Sport psychology as a research and intervention field was recognized mainly after the First International Congress of Sport Psychology, held in 1965, and the creation of the International Sport Psychology Society (ISSP). In Brazil, sport psychology was recognized by the Federal Council of Psychology (CFP) as a specialty only in 2000, although the work in this area was started in the 1950s by João Carvalhaes, who worked for the *São Paulo* Football Club and was a part of the technical committee of the Brazilian national soccer team. Even before that, psychology had been applied to physical education.

The interest of psychologists who work in the field of sports or physical activity is not limited to high-performance athletes, but covers everyone involved — parents, coaches, referees, management, as well as all those who are practicing sport or physical activity, including children, people with disabilities, the elderly, etc. Sport psychologists' activities include advising sports teams (and that involves research and education), and aiming to optimize not only the performance but also the well-being of sports practitioners.

Since sport psychology has been recognized as a specialty of psychology by the CFP, this discipline is usually taught to students of Physical Education and Sports departments. On one hand, that helps to generate greater demand for psychologists' work in sports, but on the other hand, the lack of this discipline in psychology departments contributes to the non-recognition and little interest of professional psychologists to this area. Advocates of the field have sought the establishment of scientific events and graduate courses. Today, those who seek graduate education are faced with the situation where there are few courses in sport psychology in a general sense, most of them being distance learning courses; and there are no *stricto sensu* graduate and post-graduate courses with concentration in sport psychology. Professionals who want to get their master's or doctorate degrees in this area seek research opportunities in programs with different areas of concentration or leave the country in search of the specialized training. In any area, graduate programs are responsible in part for the production of knowledge. Clearly, sports psychology in Brazil is not a part of the psychology domain, so the question is: Who are the professionals who guide these dissertations and theses? What is the training of people who seek to graduate and conduct research in sport psychology?

In 2015, in an attempt to answer these questions, at least in part, I performed a search using the portal of dissertations and theses from the Coordination for the Improvement of Higher Education Personnel (Capes). I used the following keywords: sports psychology, child and sport, psychology and sport, athlete and psychology, training of coaches, learning of coaches, and psychology, behavior analysis and sport. The search covered the period from 2011 to 2015. From the dissertations and theses found ($n = 67$), after reading the summaries, I selected 49

logo nesse campo.

A Psicologia do Esporte pode ser definida como o estudo do comportamento das pessoas envolvidas no contexto esportivo e a aplicação dos conhecimentos obtidos por meio desses estudos. Embora o reconhecimento da Psicologia do Esporte, como campo de pesquisa e intervenção, tenha ocorrido principalmente após o I Congresso Internacional de Psicologia do Esporte, realizado em 1965, e a criação da Sociedade Internacional da Psicologia do Esporte (ISSP), autores como Feliu (1991) afirmam que a Psicologia do Esporte teve início com as investigações sobre tempo de reação, conduzidas nos laboratórios de psicologia experimental. No Brasil, apenas no ano de 2000, a Psicologia do Esporte foi considerada pelo Conselho Federal de Psicologia (CFP) uma especialidade da Psicologia, apesar de os trabalhos nessa área terem sido iniciados na década de 1950 com João Carvalhaes, que atuou no São Paulo Futebol Clube e fez parte da comissão técnica da seleção brasileira de futebol (dados de pesquisa sugerem uma aproximação da Psicologia com a Educação Física anterior a esse período).

O interesse do psicólogo que atua no contexto esportivo ou de atividade física não está no trabalho apenas com atletas de alto rendimento, mas com todos os envolvidos nesse contexto, como pais, treinadores, árbitros, dirigentes e com todos os que estejam praticando algum esporte ou atividade física (por exemplo, crianças, pessoas com deficiência, idosos etc.). Sua atuação inclui atividades tanto de assessoria a equipes esportivas quanto de ensino e pesquisa e visa a otimização não apenas da performance mas também o bem-estar do praticante de esporte e atividade física.

Posto que a Psicologia do Esporte tenha sido considerada uma especialidade da Psicologia pelo CFP, esta disciplina costuma ser ministrada para estudantes dos cursos de Educação Física e Esporte. Se, por um lado, a Psicologia nos cursos de Educação Física e Esporte contribui para gerar maior demanda pelo trabalho do psicólogo, que atua no contexto esportivo, por outro, a sua falta nos cursos de Psicologia contribui para que se continue desconhecendo esse campo de atuação e para o pouco interesse dos psicólogos por essa área. Aqueles, que em razão de uma história de vida específica se interessam pela área, buscam (in) formação em eventos científicos e em cursos de pós-graduação. Os que buscam a pós-graduação encontram o seguinte cenário: poucos cursos *lato sensu* em Psicologia do Esporte, sendo boa parte deles cursos à distância e ausência de cursos de pós-graduação *stricto sensu* cuja área de concentração seja Psicologia do Esporte. Os profissionais que querem realizar seu mestrado ou doutorado na área buscam linhas de pesquisa em programas com áreas de concentração diferente desta ou saem do país em busca de formação específica. Pensando-se mais propriamente nos cursos de pós-graduação *stricto sensu*, já que esses cursos são responsáveis, em parte, pela produção do conhecimento na área, atentando-se para a afirmação de Rubio (1999) segundo a qual a psicologia do esporte não é um terreno exclusivo de psicólogos, questiona-se: Quem são os profissionais que orientam essas dissertações e teses? Qual a formação das pessoas que buscam a pós-graduação em linhas de pesquisa / temas relacionadas(os) à Psicologia do Esporte?

Na tentativa de responder, pelo menos parcialmente, a essas questões realizei uma busca, em outubro de 2015, no portal de dissertações e teses da Coordination for the Improvement of

for analysis (36 theses and 13 dissertations). Repeated works and those which did not establish a relationship of psychology with sport were excluded. Then I made an analysis of the *Curriculum Lattes* (national standard in the record of the academic path of students and researchers from Brazil) of the author of the dissertation/thesis and of the corresponding advisor, in order to verify data on the formation of both (undergraduate/master/doctorate degrees), and concentration area of graduate programs. The data showed that 5.4% of advisors did not specify their undergraduate specialty and 16.2% their graduate one. Among those who did, approximately 54% received their undergraduate degree outside the field of psychology (e.g., physical education, history, philosophy, medicine, nutrition, literature, etc.). Only 27% of advisors received masters and 32.4% received doctorate degrees in programs with the area of concentration in psychology. The same pattern can be observed with students who authored theses and dissertations. Approximately 70% of them did their undergraduate studies outside psychology — the majority (55%) in physical education. With graduate programs, 69.3% had masters degrees and 53.6% doctorate degrees in education, religious studies, nutrition, pediatrics and health, etc. It is worth noting that the search did not include dissertations and theses written outside Brazil.

What about the production of dissertations and theses that had, as a theoretical framework, behavior analysis? Less than 15 per cent! These data strengthen the assertion that in Brazil, few behavior analysts are working in the field of sports, despite the fact that the discipline of behavioral psychology of sports is officially four decades old, with numerous works produced and published in other countries.

Behavioral psychology of sports officially began in 1972, when Brent Rushall and Daryl Siedentop published the book *The Development and Control of Behavior in Sport and Physical Education*. Also noteworthy are the names of Ron Smith and Frank Smoll who in 1970s conducted reviews and behavioral interventions with young athletes at Washington University, and Dickinson who wrote the book *The Behavior Analysis of Sport* (1977). In 1970s and 80s, publications in behavioral sport psychology included guidelines to coaches, case reports with data collection before and after the intervention, and research which used single case designs. Most of the scientific production of this approach is concentrated in North America, with Garry Martin from the University of Manitoba, Canada, leading the area in number of publications.

Multiple studies demonstrate the potential of applied behavioral analysis (ABA) to improve athletic performance in various sports. However, in Brazil, sports psychology is dominated by cognitive science. Few behavior analysts are working in the field of sports in our country and, as a result, many sports professionals are unaware, or know very little, of ABA as a theoretical system and its specific application in sport.

The historical connection of sport psychology with Physical Education departments, the specific train-

Higher Education Personnel (Capes). Para a busca usei as seguintes palavras-chave: psicologia do esporte, criança e esporte, psicologia e esporte, atleta e psicologia, capacitação de treinadores, ensino de treinadores e psicologia e Análise do Comportamento e esporte. O levantamento abrangeu o período de 2011 a 2015. Das dissertações e teses encontradas (n=67), após leitura do resumo, selecionei 49 para análise (36 dissertações e 13 teses). Eliminei os trabalhos repetidos e aqueles que, após a leitura do resumo, não estabeleciam relação da Psicologia com o Esporte. Em seguida realizei uma análise do currículo *lattes* do autor da dissertação/tese e de seu orientador averiguando dados referentes à formação de ambos (graduação/mestrado/doutorado) e área de concentração dos programas de pós-graduação. Os dados mostraram que, em relação aos orientadores, aproximadamente 54% deles fizeram outros cursos de graduação que não o de Psicologia (ex., Educação Física, História, Filosofia, Medicina, Nutrição, Letras etc.). Quanto à pós-graduação, apenas 27% deles realizaram seu mestrado e 32,4% seu doutorado em programas cuja área de concentração era Psicologia. Quanto aos orientandos, autores das teses e dissertações, o mesmo se repete. Aproximadamente 70% deles fizeram sua graduação em outras áreas: a maioria (55%) fez sua graduação em Educação Física. Em relação à pós-graduação, 69,3% fizeram o mestrado e 53,6% o doutorado em cursos de outra área que não a Psicologia (ex., Educação, Ciências da Religião, Nutrição, Pediatria e Saúde etc.). Os dados desse levantamento apontam o mesmo que Rubio (1999) e nos faz repensar a formação de psicólogos para atuação nesse contexto. Informa-se que a busca não abrangeu trabalhos de mestrado e/ou doutorado realizados fora do Brasil. Ainda, quanto aos orientadores 5,4% e 16,2% não fizeram referência, no *curriculum lattes*, a sua formação (curso de graduação e mestrado, respectivamente).

E quanto à produção de dissertações e teses que tinham, como referencial teórico, a Análise do Comportamento? Os dados da busca mostraram que menos de 15% das dissertações e teses encontradas e analisadas foram produzidas com base nesse referencial teórico. Este dado fortalece a afirmação de que, no Brasil, são poucos os analistas do comportamento que atuam no contexto esportivo, apesar da Psicologia Comportamental do Esporte já ter quase quatro décadas, com inúmeros trabalhos produzidos e publicados em outros países.

A Psicologia Comportamental do Esporte teve início em 1972 com os trabalhos de Brent Rushall e Daryl Siedentop que publicaram o livro *The Development and Control of Behavior in Sport and Physical Education*. Destacam-se ainda os nomes de Ron Smith e Frank Smoll que, a partir da década de 70, na universidade de Washington, conduziram avaliações e intervenções comportamentais com atletas jovens e de Dickinson (1977) que escreveu o livro *A Behavior Analysis of Sport*. No período compreendido entre a década de 70 e 80 as publicações na área de Psicologia Comportamental do Esporte incluíam orientações a treinadores, relatos de casos com coleta de dados, antes e após a intervenção, e pesquisas em que se utilizaram delineamentos de caso único (Martin, Thompson, & Regehr, 2004). A maior parte da produção científica dessa abordagem está concentrada na América do Norte, sendo Garry Martin, da Universidade de Manitoba, Canadá, um expoente da área, devido à sua grande quantidade de publicações (Cillo, 2000).

Apesar dos estudos desenvolvidos nessa área demonstrar o potencial da Análise Comportamental Aplicada para melhorar comportamentos atléticos em várias modalidades espor-

ing of Brazilian professionals in sport psychology, the absence of this discipline from the curriculum of most of the Psychology departments (even as an optional discipline) are factors that, among others, may have contributed to the situation. It turns out that little knowledge about behavior analysis of those involved in the sports often leads behavior analysts, who work in this area, to publish in ABA-specific journals and disseminate their work through ABA conferences. This, in turn, restricts the availability of research results and interventions based on this approach and keeps interesting contributions from those who are working in sports.

Although in recent years there has been a shift in the focus of research in sport psychology in favor of psycho-diagnosis and profile survey to investigate issues such as effects of different techniques on performance, much of the empirical research still involves the development, validation, and use of instruments that evaluate the verbal report of the participants about their behavior. The use of scales, inventories, and questionnaires, although useful to researchers in some contexts, may contain information that does not represent the investigated behavior. If we use this type of measurement we risk observing changes only in the responses to the questionnaires, not in the behavior we want to modify. For this reason, behavior analysis values the use of direct observation and recording of the observed behavior. Through direct observation of behavior it is possible to identify the problem, the variables that affect the behavior, the resources available in the environment, and to decide on the techniques and procedures best suited to the situation. Although direct observation of behavior may be a more difficult strategy, since it often involves the development of categories for analysis, this is actually the common approach for behavior analysis and sport. Sports professionals, such as scouts, also make use of direct measures of behavior.

Another possible contribution of behavior analysis is the adoption of single-case designs, that is, designs comparing changes in the individual's behavior prior to and after the intervention, which allows demonstrating the direct influence of the intervention on the behavior. This concept sometimes is foreign to those working in sports, since there is a tradition of statistical analysis and research conducted with large groups. Although the use of statistical techniques can be helpful, their absence should not be a criterion for judging the quality of a research. Nevertheless, my experience in the field allows me to state how complicated it can be to publish articles in journals directed specifically to those working in the sports field or to have papers accepted for scientific events. Often the articles based on a single-case design are returned because, in the opinion of the reviewers, the n (number of subjects) of the research is small and the data lack statistical analysis.

Given the above, what can be done? I think that changes in this situation should start with the dissemination of the behavior analysis approach among sports professionals and not just sports psychologists. This dissemination includes participation in events, publishing articles

tivas, quando se trata de Psicologia do Esporte no Brasil, o que se constata é uma área marcada por uma produção amplamente fundamentada nas ciências cognitivas (Rubio, 2000). São poucos os analistas do comportamento que atuam no contexto esportivo em nosso país e, em decorrência disso, muitos dos profissionais que atuam no esporte desconhecem, ou conhecem muito pouco, a Análise do Comportamento, como um sistema teórico da Psicologia e sua aplicação específica ao esporte.

A ligação histórica da Psicologia do Esporte com os departamentos de Educação Física, a formação específica de profissionais brasileiros, em Psicologia do Esporte, em países nos quais há uma tradição mais forte referente a abordagem cognitivo-comportamental, a ausência desta disciplina na grade curricular da maioria dos cursos de Psicologia (como disciplina opcional ou obrigatória) são fatores que, entre outros, podem ter contribuído para o quadro que se apresenta, no Brasil, quando o assunto é esporte e Análise do Comportamento. Ocorre que o pouco conhecimento sobre Análise do Comportamento dos envolvidos no contexto esportivo leva, muitas vezes, os analistas do comportamento, que atuam nessa área, a publicarem e divulgarem seus trabalhos em congressos e revistas específicos de Análise do Comportamento. Isso pode restringir a disseminação dos resultados de pesquisas e intervenções conduzidas com essa orientação e que poderiam trazer contribuições interessantes para os que atuam no contexto esportivo.

Apesar de nos últimos anos ter havido mudança de foco das pesquisas na área da Psicologia do esporte, de psicodiagnóstico e levantamento de perfil para averiguação de outros temas como, por exemplo, efeitos de diferentes técnicas sobre desempenho, uma grande parte das pesquisas empíricas conduzidas nesse contexto ainda envolve a elaboração, validação e/ou utilização de instrumentos que avaliam o relato verbal dos participantes sobre seu comportamento. O uso de escalas, inventários e questionários, conquanto venha a ser útil para o pesquisador em alguns contextos, podem conter informações que não representam o comportamento investigado. Se usarmos esse tipo de medida incorremos no risco de observar mudança apenas nas respostas dadas aos questionários, inventários etc. e não no comportamento que pretendíamos modificar. Por essa razão, a Análise do Comportamento valoriza também a utilização da observação direta e o registro dos comportamentos observados. Por meio da observação direta do comportamento entendemos que é possível identificar a situação-problema, as variáveis que afetam o comportamento, os recursos disponíveis no ambiente e decidir sobre as técnicas e procedimentos mais adequados à situação. Embora a observação direta do comportamento possa ser uma estratégia mais trabalhosa, visto envolver, muitas vezes, a elaboração de categorias para análise este é, na verdade, um aspecto que aproxima a Análise do Comportamento e o esporte. Profissionais da área do esporte também fazem uso de medidas diretas do comportamento como, por exemplo, os *scouts*.

Outra contribuição possível da Análise do Comportamento, que por vezes não chega aos que atuam no contexto esportivo, por existir nessa área uma tradição em análise estatística e em pesquisas conduzidas com grandes grupos, é a proveniente da adoção de delineamentos de sujeito único, isto é, delineamentos que comparam a mudança do comportamento do indivíduo com seu próprio comportamento, anterior à intervenção, que permite demonstrar a influência direta da intervenção sobre o com-

in specialized journals, and participation in committees, among others. This year, the Brazilian Olympic Committee has invited behavior analysts to participate in its work. The presence of behavior analysts on the faculty of Physical Education and Sport departments seems to be an interesting proposition to me. To make these ideas a reality, we must return to the issue that started this article, that is, the training of sports psychologists. There are competent and well-prepared professionals working in this field in Brazil today, and there is a lot of good-quality research being done. However, the demand for sport psychologist has grown at a pace, which, in my opinion, seems to be faster than the number of professionals trained to work in the field. Finally, I want to point out that there are many contributions by behavior analysis to the field of sports, but unfortunately many of these contributions have not reached those who could make use of them. 🌊

portamento (Kazdin, 1982 e outros). Ainda que o uso de técnicas estatísticas possa ser útil, sua ausência não deveria ser critério para julgar a qualidade de um trabalho. Apesar disso, minha experiência na área me permite afirmar o quão complicado pode ser publicar artigos em revistas dirigidas especificamente aos envolvidos com o contexto esportivo ou ter trabalhos aceitos em eventos científicos da área. Muitas vezes os artigos e/ou trabalhos que empregam delineamentos de caso único são devolvidos, pois, na opinião dos pareceristas, o *n* da pesquisa é pequeno e os dados carecem de análise estatística.

Diante do exposto, o que fazer? Penso que mudanças neste quadro passam pela divulgação da Análise do Comportamento a outros profissionais e não apenas a psicólogos. Essa divulgação compreende a participação em eventos, a publicação de artigos em revistas específicas da área, participações em comitês, entre outros. Neste ano, o Comitê Olímpico Brasileiro tem à disposição de sua delegação psicólogos analistas do comportamento. A presença de analistas do comportamento que ministrem disciplinas nos cursos de Educação Física e Esporte me parece uma alternativa interessante, mas, para que todas essas propostas se tornem possíveis, é preciso retomar a questão que deu origem a este texto, isto é, à formação de psicólogos para atuação no contexto esportivo.

A inserção da disciplina Psicologia do Esporte nos cursos de graduação em Psicologia poderia contribuir para aumentar o interesse desses profissionais por esse campo de atuação. A maior oferta de cursos de pós-graduação também poderia contribuir para complementar a formação. Não obstante existirem profissionais competentes e preparados para atuar nesse campo no Brasil e apesar do fato de que muitas pesquisas de boa qualidade têm sido desenvolvidas, a demanda pelo trabalho do psicólogo no contexto esportivo tem crescido num ritmo, que, em minha opinião, parece ser superior ao número de profissionais com formação para atuar na área. Finalmente, ressalto que são muitas as contribuições da Análise do Comportamento para esse campo de atuação, mas infelizmente muitas dessas contribuições ainda não chegam àqueles que poderiam fazer uso delas. 🌊



Rio Olympics closing ceremony



Rules of the Game and Fair Play: A Case Study

research

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Brazilian playwright, journalist and novelist Nelson Rodrigues once wrote: "Often it is the absence of character that decides a match. You do not make literature, politics and football with good feelings." Disagreeing with the playwright, most researchers of sports ethics consider that sport is not, by itself, a positive or negative context for the development of fair play behavior; it is neutral. The sportsmanship of athletes is related to the type of training and competition format in which they participate. In 2014, Professor Silvia R. Souza (State University of Londrina), Marcella Bosquetti (State University of Londrina), and I developed a research objective to evaluate the behavior of coaches and athletes during games, with respect to their unsportsmanlike and fair play behaviors. Six coaches and 60 athletes from six futsal (indoor soccer) teams participated in the research. Data were collected in 12 matches of the final phase of a championship of the city of Londrina. Finals consisted of six games in a category of 9 year-olds and younger, and six games in a category of 15 year-olds and younger. We videotaped the games, recorded the comments of coaches, and used a copy of the score sheets as resources for direct observation of the behavior of interest. We wanted to check if there was a correlation between the frequency of fouls, fair play, and unsportsmanlike behavior of athletes and the behavior of coaches shortly after these responses occurred. We did not note this correlation during the evaluated games. The occurrence of unsportsmanlike behavior was low in both categories. However, we found a higher frequency of fair play behavior among under-15 athletes than with under-9 athletes, and a greater number of fouls among



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Muitas vezes é a falta de caráter que decide uma partida. Não se faz literatura, política e futebol com bons sentimentos", disse Nelson Rodrigues. Discordando do dramaturgo, a maioria dos pesquisadores da ética esportiva considera que o esporte não é por si só, contexto positivo ou negativo para o desenvolvimento de comportamentos de *fair play*, mas sim contexto neutro. A esportividade dos atletas estaria relacionada com o tipo de treino e formato de competição que participam. Interessadas nesta questão, eu, a professora Silvia R. Souza da Universidade Estadual de Londrina e Marcella Bosquetti desenvolvemos em 2014 uma pesquisa cujo objetivo foi avaliar os comportamentos de treinadores e atletas de futsal das categorias Sub 9 e Sub 15, durante jogos, em relação aos seus comportamentos antiesportivos e de *fair play*. Participaram seis treinadores e 60 atletas de seis equipes. Os dados foram coletados em 12 jogos da fase final de um campeonato da cidade de Londrina, sendo seis jogos de cada categoria. Filmamos os jogos, gravamos os comentários dos treinadores e utilizamos cópia da súmula, como recursos para observação direta dos comportamentos de interesse.

Pretendíamos verificar se haveria correlação entre a frequência de faltas, comportamentos de *fair play* e antiesportivos de atletas e como se comportavam seus treinadores logo após as ocorrências dessas respostas. Não evidenciamos essa correlação durante os jogos avaliados. Entretanto, encontramos maior frequência de comportamentos de *fair play* entre os atletas da Sub 15 comparados com os da Sub 9, e maior número de faltas entre os atletas mais jovens, considerando que a ocorrência de comportamentos antiesportivos foi baixa em ambas as categorias. Destaco

younger athletes. I highlight this because in two earlier studies of football (soccer) by Cruz in 1996, and Del Pozo in 2008, the results were the opposite. They found a higher occurrence of faults and unsportsmanlike behaviors in teams with older athletes. Furthermore, they noted a higher frequency of fair play behavior in younger athletes.

Despite similarities to football, futsal has many peculiarities. The smaller size of the sports court compared to football generates at least two significant contingencies: greater danger of a goal by the other team when fouls occur (due to reduced distances compared to football) and proximity of the referees to all athletes and coaches. In addition, in futsal there are regulations on the number of fouls. These two particular characteristics of the sport indicate that committing fouls in futsal is a behavior that generates more punishment than in football. Therefore, it is possible to argue that the lower frequency of fouls in the category under-15 compared to under-9 may have occurred as a result of older athletes being exposed for a longer period of time to the contingencies of this sport, avoiding moves that could generate goals by the opposing team. The younger players, due to a little experience with the sport, were not under this control. Similarly, in football, the older athletes were longer exposed to contingencies of the game. But in their case, exposure to these contingencies seems to produce increased frequency of fouls and unsportsmanlike behavior.

The data obtained in this research suggest, therefore, that the contingencies of a particular mode are an important aspect to be considered regarding the frequency of fouls, unsportsmanlike and fair play behaviors. The hypothesis that sports are not neutral and that their own contingencies produce greater or lesser occurrence of rules violations and sportsmanship needs to be explored further. Confirmation of this hypothesis would lead us to think about what rules and sports characteristics could be changed in order to change the frequency of these behaviors. It remains to be seen if those involved in sports would be willing to accept such changes. 🏆

esses dados, pois, diferem dos resultados encontrados por Cruz et. al. (1996) e Del Pozo (2008) com o futebol. Eles verificaram maior ocorrência de faltas e maior frequência de comportamentos antiesportivos nas equipes com atletas mais velhos. Também verificaram maior frequência de comportamentos de *fair play* para os atletas mais jovens.

O futsal, apesar de apresentar fundamentos técnicos similares ao do futebol, possui muitas particularidades. O espaço reduzido da quadra, em comparação com o futebol, gera pelo menos duas contingências consideráveis: maior perigo de gol quando faltas ocorrem (pelo espaço reduzido em relação ao futebol) e proximidade dos árbitros de todos os atletas e treinadores, em qualquer lance. Além disso, no futsal, há regulamentação no número de faltas. Apenas essas duas características particulares da modalidade nos indicam que cometer faltas no futsal é um comportamento que gera mais punições que no futebol. Portanto, é possível pensar que, nesta pesquisa, a menor frequência de faltas na categoria Sub 15 em relação a Sub 9 pode ter ocorrido em decorrência dos atletas mais velhos terem sido expostos por mais tempo as contingências da modalidade, evitando lances que pudessem gerar gols para a equipe adversária enquanto os mais novos, em razão da pouca experiência com a modalidade, não ficavam sob esse controle. Da mesma maneira, no futebol, os atletas mais velhos estiveram mais tempo expostos às contingências da modalidade. Entretanto no caso deles, a exposição a essas contingências parece produzir aumento na frequência de comportamentos faltosos e antiesportivos.

Os dados obtidos na pesquisa sugerem, portanto, que as contingências da própria modalidade são um aspecto importante a ser considerado com relação à frequência de faltas, comportamentos antiesportivos e de *fair play*. A hipótese de que as modalidades esportivas não são neutras e que suas próprias contingências produzem maior ou menor ocorrência de infrações e esportividade precisa ser mais explorada. A confirmação dessa hipótese nos levaria a pensar sobre quais regras e características dos esportes poderiam ser alteradas a fim de modificar a frequência desses comportamentos. Restaria saber se os envolvidos no contexto esportivo estariam dispostos a aceitar tais mudanças. 🏆





profile

Dr. Francis Mechner



Interview By: Adam Hockman



Dr. Francis Mechner

Born in Vienna, Austria in 1931, Francis Mechner came to the United States in 1944. He received his Ph.D. in Experimental Psychology (1957) from Columbia University where he studied with Fred S. Keller and William N. Schoenfeld, and taught Experimental Psychology until 1960, when he formed his non-profit corporation (now named the Mechner Foundation) to carry on his basic and applied work in the behavioral sciences. In 1959 he began work on an instructional technology based on behavioral analysis, which he then applied to the development of training systems for industrial corporations, medical education, governmental agencies, and high school science education. In 1963 he created a precursor of the Office of Equal Opportunity (OAE) Job Corps Training Centers; worked with UNESCO to upgrade science education in South America and Asia; and designed manpower development programs that were promoted by the Organization for Economic Cooperation of Development (OECD) to their member states. In the 1970s, Mechner participated in the design of Sesame Street and created a comprehensive early childhood development and educational daycare system that was implemented by four states and endorsed by the U.S. Department of Health, Education, and Welfare.

As part of his basic research work, Mechner developed a formal symbolic language for codifying behavioral contingencies with applications in economics, sociology, law, and education. In the late 1960s, Mechner founded the Paideia School where he demonstrated his Paideia Individualized Education (PIE) model as an exemplar of personalized K-12 education; work that he is currently carrying forward at Queens Paideia School in Long Island City, NY.

To fund his work, Mechner founded and built a series of companies (eleven in total), several of which introduced technological innovations that revolutionized their respective industries. Mechner is also an accomplished painter, musician, and pianist of concert caliber. He achieved a Master rating in chess (2236) and a 5-dan rating in the Asian strategy game of Go. Dr. Mechner is fluent in German, French, Spanish, English, and Portuguese (See also the Mechner Foundation web site).

I understand that you had a rather tempestuous childhood. Is there anything you would be willing to tell us about that?

At age seven, after fleeing 1938 Vienna, I changed residence 16 times, covering 9 cities, 4 countries, 4 languages, and many different perspectives on the world—a cultural anthropology course in which I learned that most of what people believe, me included, isn't so—good preparation for a career in science and technology.

So you grew up in Vienna?

Yes, in the Vienna of the 1930s, where typical middle class Jewish families believed that a good education inculcates intellectual values and proficiency in music and the arts. But my subsequent travels taught me that different cultures have very different ideas about those things and also about how one speaks, *what* one talks about and doesn't, the questions one asks and doesn't, what one pays attention to and doesn't, what is or isn't considered real, and so forth. There is no better way for a child to learn the arbitrariness of firmly entrenched beliefs than immersion in societies that hold different ones.

How did these childhood experiences and early interests lead you to behavioral science?

Since early childhood, my main passion had always been drawing and painting, and this naturally led to a preoccupation with perception—why things looked

the way they looked, illusion, visualization, perspective, and so forth; and from there, it was only a small step to an interest in beliefs—what’s real and what isn’t—why people believe some truths to be self-evident and some not. By the time I got to Columbia University I had already discovered Freud, but then saw that Skinner offered a far more satisfying and more scientific account of behavior, one that also had wide-ranging societal implications for how people live and manage their affairs. I was excited to learn that thinking is behavior and that Skinner’s behavior modification techniques together with the Hull/Skinner/Keller/Schoenfeld conceptualization of “concept” can serve as important tools of educational technology.

In what way did Professor William Schoenfeld influence you?

I resonated with his approach when he tried to convince the class of how little we all knew and how many mistaken beliefs we hold or take for granted. He changed my life when he said that we can’t yet even observe the effect of a single reinforcer on a single response. I decided, on the spot, that I would figure out a way to do that, and got started on what became my “revealed operant” work—a technique for studying the characteristics of individual occurrences of operants. I came to see that although it is sometimes useful to define operants as discrete instantaneous events—like a single switch closure—the answers we seek are often hidden in the operant’s other attributes—the ones that we are *not* observing.

Can you give us some examples of where this technique can be applied?

There are many areas of behavior research where it would be very helpful to be able to track changes in a stream of operants. Given the plasticity of behavior—its amazing sensitivity to environmental factors that evolution generated—I believe that an organism’s behavior can never reach a “steady state.” When a behavior pattern becomes less effective or less reinforcing, it reverts to earlier forms. This realization got me interested in “resurgence” as a basic mechanism of learning. I saw this concept as opening a new highway to the analysis of learning and practicing any skilled performance, including piano, which had always been one of my passions. These lines of research depend on the ability to observe changes in individual occurrences of operants as a function of time or repetition, and to identify and track variants and variations, including so-called “mistakes.”

In 1959 you published an article in JEAB on your notation system for behavioral contingencies, the system that Jack Michael and others used to teach to their students. What made you decide to work on that system again in recent years?

I saw that in the history of science, the progress of a discipline tended to accelerate when it adopted a formal symbolic language for the codification of its units. I’m referring to the symbolic languages of chemistry, mathematics, logic, musical notation, and even choreography. I thought that behavioral science would expand its range of applications and that its power would become more evident if it had its own formal symbolic language for codifying the behavioral events and contingencies with which it is able to deal.

What exactly do you mean by the term “behavioral contingency”?

It’s a statement that specifies what acts are available in a given situation or circumstance, and the possible consequences of those acts. It never describes or codifies what *actually* happens, only what *can* happen. In that sense it is somewhat like Skinner’s concept of the reinforcement contingency. “If you drop the glass on

a hard floor, it may break” states a behavioral contingency, whether or not you ever drop the glass. The behavioral contingency statement is silent as to what you may *actually* do—drop the glass, hold on to it, or something else yet. Laws are an example of behavioral contingencies.

So why did you decide to modify your original formal language?

Since the original contingency language was pretty much limited to single-organism contingencies, I wanted to make it applicable to human affairs in general, including interactive behavior. By adding only one new symbol, for the *agent* of the act, I was able to accommodate the far more complex multi-party contingencies we care about. I came to see that a truly useful language had to be able to codify such complexities of human interactions as, for instance, perception (or misperception) of another individual’s mistaken belief or misperception; the effects of different histories with respect to a situation and its behavioral contingencies; and ways to codify, with a 5-symbol vocabulary and a simple syntax, consequences and their attributes, intents, beliefs, probabilities, uncertainty; and contingencies that change progressively as a function of time or of specified events.

What do you feel you achieved by expanding the applicability of your contingency language?

I was able to illustrate its applicability to economics, law, sociology, conflict analysis, business, environment, education, and other human affairs. And by illustrating this wide range of applications, I felt that I was thereby demonstrating the virtually unlimited reach of the behavioral approach itself to human affairs. But as in the case of any language, for the behavioral contingency language to be useful in practice, the user must have a certain degree of fluency in it.

Suppose a behavioral scientist wanted to become sufficiently fluent and proficient in the language to apply it in a certain field. How would one go about that?

I would suggest starting by reading some of the articles that describe the language and its applications. (*The Mechner Foundation website has a bibliography, and articles are available under “Downloads, Theory”*). To achieve fluency, one would have to practice applying the language to a variety of simple familiar situations, and create or join a community of like-minded individuals who want to become proficient in the use of the language. The language itself is simple and easy to master; what is more difficult is to identify the critical features of the contingencies that are to be encoded for a particular application. The language has been translated into Spanish, and used, by Maria del Rocio Hernandez Pozo of Mexico. Others, too, have used it in scientific papers. Mechner Foundation personnel generally try to be responsive to inquiries regarding the contingency language.

Much of your work has been in the application of behavioral science to educational technology. What was the initial catalyst for this interest?

Skinner’s 1954 and 1958 articles inspired me to experiment with new instructional systems. In 1960, I developed the first programmed instruction course that was actually used to train industrial personnel, at Schering Corporation. The program was based on a “behavioral analysis” method I had been devising for breaking down cognitive content and text into its component “concepts” and “chains” and then sequencing these in a pedagogically effective way (see *Behavioral Analysis for Programmers*, 1962; *Behavioral Analysis and Instructional Sequencing*, 1967). Over

the next few years I applied this method to the development of instructional programs for middle school and high school science subjects, for medical education, and for industrial training.

Can you give us an example of one of your industrial training programs that became particularly successful?

Sure. In 1962, I developed a simulation method for learning interpersonal competencies like consultative selling or supervision of personnel. It involved simulating the typical interpersonal situations that are encountered and the thought processes and actions those situations required. During the training, the trainees responded, usually orally, as if they were in those situations, and they received appropriate feedback. In 1963 I used that technique to develop the training program Professional Selling Skills ("PSS"), which allegedly became the most widely used training system of all time, and numerous derivative versions of it spawned today's nine-figure sales training industry.

Weren't your educational programs also used in medical education?

Yes, in the 1960s we developed instructional programs in electrocardiography, allergy and immunology, thyroid disease, rheumatoid arthritis, endocrinology, and many other medical subjects. Close to a million copies came to be used "in virtually all of the country's 91 medical schools and 1100 teaching hospitals" according to a report published by one of the programs' distributors.

How do you explain these successes, considering that programmed instruction generally did not work out very well?

I think the reason ours worked out is that we always started out with a careful behavioral analysis of the subject matter, for example, identifying the concepts that require attention and breaking these down into instances and non-instances. During the development process, we put all of our programs through several testing and revision cycles. Others in the field didn't do those things, and it made all the difference.

How did your work in educational technology lead to your Job Corps Training Center work?

In 1964, the US Office of Economic Opportunity (OEO) started creating Job Corps Centers intended to bring economically and educationally disadvantaged youths into the country's economic mainstream. I had already designed such a training center in 1963 under a contract with the Office of Governor Peabody of Massachusetts. The design included the management system, the behavioral contingencies of the center's operation, the policies and procedures, the functions of the staff, and the training systems for the trainees. This design became the model for our OEO contract to operate the Huntington West Virginia Job Corps Center, which in turn was then adapted for the OEO's nationwide chain of such Centers. We also developed training and management systems for those centers.

You also worked with some international organizations. Can you tell us about that?

UNESCO wanted to train South American and Asian science teachers to learn and adopt more modern science teaching methods, like lab work and scientific inquiry. They hired me to train teachers from 30 South American countries and in the next year from 30 Asian countries. Those projects were headquartered in Brazil and Thailand respectively. At the same time Europe's OECD recommended our training methodology to their member states for their manpower development programs, as a result of which we became involved with several countries.

You are an exemplar for applying behavioral science outside of the traditional domains. What are areas of opportunity for the behavior analysis community to further impact the world?

It's probably not necessary to convince most readers of *Operants* that most of the world's problems involve human behavior, and that behavioral science is the key discipline for solving them. I believe that the necessary steps are to analyze every problem correctly in terms of the variables and dynamics that are at work. This requires good analytic tools, like a formal symbolic language that may help develop a clear and correct understanding of the controlling contingencies. Given a good analysis, promising and practical interventions can then follow more easily. That's what I have been trying to do in K-12 education reform.

Your educational innovation work has permeated much of your career, as I understand it. What led to your interest in early childhood education?

Biologists know that in all higher animal species, the most important competencies are either learned very early in life, or else the windows of opportunity for the fastest and most permanent learning are missed. Humans are no exception. The only thing that keeps changing as our world becomes more complex are our beliefs as to which competencies are the most important ones, and these vary from culture to culture. In 1965, when Xerox Corporation bought my educational technology company, Basic Systems, I was able to convince them of the overarching importance of a child's early learning, and they then provided generous funding for the development of an infancy and pre-school education program over several years.

Were you ever able to bring that program to life?

Yes, but it's a long story. In 1969, when Xerox (wisely) decided to concentrate their marketing efforts on PSS (my instructional program "Professional Selling Skills"), they freed me to seek other funding for my work on early learning. I turned to the capital markets and raised \$11 million (approximately \$75 million in 2016 dollars) for the development of a major early childhood development and educational daycare system that included a thinking skills curriculum and parent education. In parallel, I worked with Joan Cooney, Lloyd Morisett, Ed Palmer, Gerald Lesser, and the Carnegie Corporation's Children's Television Workshop on the original design of the Sesame Street programs. My company UEC obtained large contracts to implement our educational daycare systems in four states, received official endorsement from the U.S. Department of Health, Education, and Welfare, and I testified before the Senate Finance Committee on behalf of the Comprehensive Childhood Development Act of 1971, which was passed by both houses of congress. This legislation would clearly have been transformative had President Nixon not vetoed it. That was a sad day for American education.

Despite this disappointment, didn't your company also create the Armonk Paideia School and its Paideia Individualized Education (PIE) system?

Yes. That system was inspired in part by Professor Fred Keller's Personalized Systems of Instruction (PSI). The PIE technology I demonstrated in that school was considered Polyannish at the time. Though it is no longer viewed that way, mainstream acceptance took many decades. The main novel features of the PIE technology are the focus on the details of the behavior and progress of individual students (individualization or personalization) made possible by a 6:1 student-teacher ratio; defining the role of teachers as "learning managers" (Keller's idea); the need to configure the

school so as to accommodate its real functions, including the roles of the learning managers; and simulation within the school setting of the situations and contingencies for which the students are ostensibly being prepared—namely the student’s future work and family situations. On the curriculum side, we place as much emphasis on the social-emotional, self-management and thinking competencies, as we do on the traditional academic ones.

I understand that you funded your work by founding and building technology companies. How were you able to transition from behavior research to the type of thinking that these diverse business endeavors required?

It wasn’t that much of a transition. I always begin with the assumption that I know nothing, and that what others “know” is usually not so. In business, I would take a fresh look at a technology that is unsatisfactory in some important way and try to come up with a better one, or find a partner who can. The hardest part, always, is to ignore the many convincing and heart-felt explanations of why it can’t be done and shouldn’t be attempted.

Can you give us some examples of that from your business career?

I can give you many. The first one was the 1960 general wisdom that there can be no such thing as an educational technology business. History has answered that one. A second example was the general wisdom that sales ability can’t be learned, because it’s innate. Along came PSS. A third was that programmed instruction is good only for rote learning. So we demonstrated that with proper behavioral analysis it can teach the high level conceptual material of medical education and interpersonal judgment. I could give you five more examples of how ignoring prevailing certitudes enabled us to introduce new technologies that then came into worldwide use.

Does this approach also apply to education reform?

Very much so. The traditional teacher-in-front-of-class format had long been considered immutable. The PIE model redefined the concepts of classroom, teacher, and school. A K-12 PIE school modular unit has 30-40 students of mixed ages under the tutelage of a team of learning managers. The world of education still considers it self-evident that the 6:1 student-teacher ratio is ruled out by virtue of being too expensive. Far from being ruled out, I believe that it is necessary. When such small 30-40-student modular school units are aggregated to form a larger 400-600 student school, this low ratio can be maintained, with far better results, at no per-student cost increase over present-day public school costs per student.

There seems to be a developing emphasis on the so-called “21st Century Skills,” as in the new Every Student Succeeds Act. How do you view this?

In the 1970s we didn’t call them 21st Century Skills, but these non-academic competencies were an important aspect of the PIE system already at that time. In those days, we were told that schools couldn’t and shouldn’t address those aspects of education—that it was the parents’ job. But while this belief is now changing, the change is still mainly at the verbal level, with few new instructional practices or learning systems for those competencies having yet been introduced. Terms like grit, collaboration, self-management, growth mindset, social-emotional skills, etc.

refer to constructs. Constructs may be *defined* by behaviors that can be addressed by educational interventions, but the constructs themselves can’t be addressed directly. Only actual behavior can be addressed directly.

So how do you go about teaching those competencies?


By teaching the child the relevant behavior. We ignore those constructs. We teach kids the behavior of thinking—how to actually do it. The learner thinks out loud at first. We teach them self-queries that are appropriate in the various situations they encounter such as “What’s my goal?” “What are my options?” “What is the other person thinking?” or “What do I want to find out?” With practice, these self-queries become increasingly covert. We call such self-queries “heuristics,” Every type of situation requires its own heuristics—social situations, decisions, problems that need to be solved, concepts that need to be analyzed, and situations that require self-management. It is via the learning of useful heuristics that our students acquire thinking competencies and inquiry skills in science, social studies, math, and English language arts. We treat thinking as behavior that can be modeled, observed, practiced, and shaped by feedback.

What is your current focus of activity?

K-12 education reform, in all its aspects. We operate a research and development laboratory for new educational technologies and tools. The PIE system itself is one of these, but we are also developing some that can be used in other educational settings, including today’s public schools, to deliver instruction that is more genuinely personalized and addresses the diverse requirements of a child’s K-12 educational development. My goal now is to persuade educational policy makers that we have a valid roadmap for comprehensive education reform. We have demonstrated some of the key technologies and I have assembled the nucleus of a team of highly talented individuals who know how to implement them. I hope to strengthen that team further and secure the funding that will bring our work to life. I may be old, but hopefully not too old to finish up. We are motivated by our belief that the technologies we are developing will become the workhorses of future K-12 education.

Your life’s work has evidently been highly diverse—basic behavior research, far ranging applications of behavioral technology, education, music, art, and literature. Is there a common thread or theme that runs through all of these?

Perhaps. I have always tried to demonstrate the breadth and reach of Skinner’s behavioral approach—a goal that has driven much of my basic research as well as my applied work. A recent example is an article in which I try to show how a behavioral/biological analysis of aesthetics in the arts and sciences can be fruitful in an area that has tended to stay mired in verbiage. I suppose that the driver of most of my work has been my desire to convince the world that behavioral science holds the keys to the solution of many of its problems.

Dr. Mechner, I appreciate your providing us with this glimpse of your life and career. There is no doubt that your circuitous journey will provide inspiration and direction to those who believe in our science’s potential impact on the world and wish to participate in extending it into uncharted territory. 

Katerina Dounavi, PhD

Queen's University

Belfast, Northern Ireland



Interview by Elena Cló (Bologna, Italy)



Dr. Katerina Dounavi (BCBA-D) is a lecturer in Applied Behavior Analysis and Autism at Queen's University Belfast, where she also serves as a deputy director of the Centre for Behavior Analysis, and as a coordinator of the Master of Science program in applied behavior analysis. Her responsibilities include, among others, teaching, supervising research students, and conducting research in the areas of behavior analysis, education, autism, verbal behavior, learning disorders, and related disciplines. Additionally, she is the clinical director and the founder of Magiko Sympan Centre in her native Greece. She consults in France, Germany, Spain, and other countries in Europe and beyond, offering evidence-based educational services to children with autism and other developmental or learning disorders and their families, and training to students and professionals.

Dr. Dounavi is a frequent contributor to Operants.

How did you get into the field of behavior analysis?

As a first-year psychology undergraduate student, I had a passion about children. At this point I was still young and unsure of my future career in psychology. A neighbor was looking for a student to be trained in applied behavior analysis (ABA) to work with her child, recently diagnosed with autism. Luckily, I was able to take on the training along with my coursework. That job changed my life. I was certain that I would devote myself to behavior analysis after experiencing first-hand how powerful the science can be in changing the developmental pathway of a child. After that first life-changing experience, I had some training in theory: learning about “behavior modification” at the university, attending seminars on ABA, and coming into contact with Mark Sundberg’s resources!

Tell us about the field of behavior analysis in Greece. What steps do you think are necessary to spread the science of behavior in the land which gave birth to education and philosophy in Europe?

Ancient Greeks set the basis for science as we know it today, although centuries later, the answers they provided to many of the questions they set to answer were proved false. However, the reason why Greek philosophy and epistemology are still taught across the globe is because the methods employed by ancient Greeks to study natural phenomena — observation and systematic manipulation — led to the development of scientific systematization. As scientists, we might often fail to respond to specific questions; but, as long as the research methods employed to discover the true nature of phenomena are systematic, every attempt will be bringing us closer to the truth. These core elements of ancient scientific inquiry are common with the core elements of behavior analysis.

This way of approaching all aspects of life is still characteristic of Greeks. In everyday conversations, analytical thinking, experimentation, doubt and the pursuit of the truth are still eminent. This observation and my experience working in Greece have led me to believe that when professionals and consumers come into contact with behavior analysis in its pure form, they get trapped by the contingencies and become fascinated by the discoveries that follow. I have repeatedly experienced how revealing it is for young students, experienced professionals, and parents of typically developing children or children with special needs, when they identify the first functional relation (e.g., when a kid starts talking for the first time as a result of a few manipulations in the contingencies governing verbal behavior).

With Mickey Keenan, and other colleagues, we [discussed](#) how behavior analysis has quite recently started emerging in Greece. At these difficult times, where years of economic recession have been highlighted to all by the images of refugee children drowning in the Aegean Sea escaping from a war appearing on the news, the need for science to lead the way has become more prominent than ever. I am strongly convinced that we need to disseminate behavior analysis in Greece to increase the number of highly trained professionals who can effectively set these contingencies through an ethical professional practice that changes people’s

lives. In this attempt to disseminate the science, the Hellenic Community for Behavior Analysis has played a pivotal role since its inception in 2012 (e.g., see a freely accessible [key-note address](#) from 1st conference held in Athens in 2013 and a [roundtable discussion](#) on the status of BACB credentials in Greece from the 2nd conference held in Athens in 2015). It will also be instrumental to find efficient ways to make training available in Greek (e.g., see [here](#) for a translation of the BACB Code in Greek) or to enable Greek students to study from Greece without a need to relocate (such as through the online University [MScABA](#) or distant PhD we offer at the [Centre for Behavior Analysis](#) at Queen's University).

What is your opinion about the current cognitive-behavioral approach? Do you think it is possible for radical behaviorism to become truly widespread and common when almost all the mainstream cultural conception and values are different and often incompatible with it?

We need to conduct research and practice in all areas related to human existence. It is important to incorporate a values-driven approach within the science, so that a holistic view of life is adopted. Behavior analysis has yet to address numerous questions that cognitive behavioral psychologists have already attempted to respond to, even though existing explanations are mentalistic in nature. We need to address all areas of human pain to increase well-being. The public will then start perceiving behavior analysis as a science and not as an intervention for autism. This will help to further illustrate the impact the science can have on life.

As behavior analysts, we share a great responsibility in promoting a powerful technology to change human behavior. Should we manage to influence society, would we, behavior analysts, be ready for this call? How can ethical awareness and behavior be improved in the context of behavior analysis itself?

I always tell my students that a good behavior analyst is not the one who is the most knowledgeable; it is the one who is, above all, ethical. We make mistakes, as all humans do, but a continuous effort to improve, respect others and actively protect their best interest is what will make a real difference in this world.

I regret to say, we have sometimes failed to be ethical. A very good colleague of mine once told me in a conversation over a tea that I should not forget that behavior analysts are humans. I was deeply disappointed at that time, having to accept that we were no different from other professionals! We might actively seek evidence on which to base what we do, but overall we could do better in setting ethical examples for the people we collaborate with who might not be behavior analysts. An example of a reason why I believe we have failed is the image many non-behavior analysts have of us, that is — as professionals who strive for power,

struggle to collaborate within multidisciplinary teams, and sometimes constitute them as bad models for young students. Please excuse me for my sincerity but I hope it serves to make us reflect on the fact that the best representation of our science is the people, behavior analysts. We have to make our best efforts to serve as positive models of this science ourselves, within the field for younger professionals but also towards the outer world if we want people to listen and get inspired by us.

In improving ethical professional practice, I would like to highlight the importance of regulating our profession (e.g., through the [BACB credentials](#)) and sharing a common ethical code. This has to be the cornerstone. We should make sure that students who receive training in behavior analysis get the chance to prove a deep understanding of the need for such a code, and its interpretation and applications in different cultural settings. This is why the first series of behavior analytic documents to be translated into Greek was chosen to be the [Ethical and Professional Code for Behavior Analysts](#).

Current changes in supervision standards recently implemented by the BACB (e.g., the requirement that all supervisors undergo a mandatory 8-hour training) will also contribute towards ethical and professional practice, since ongoing supervision by competent behavior analysts can be a powerful tool towards the dissemination of good

practice. Further enhancements in the supervision model (e.g., the establishment of a life-long supervision/peer-support requirement) also contributes toward this aim. Other non-regulated ideas, such as the creation of a freely accessible network for behavior analysts in the form of an online forum, could also be instrumental in providing peer advice and increasing professional

A good behavior analyst is not the one who is the most knowledgeable; it is the one who is, above all, ethical.

integrity.

Do you have any favorite writing or book of Skinner's?

Beyond Freedom and Dignity provides an excellent basis to start for a change in the focus of contingencies towards collective behavior, which will drift our values from individualistic towards group-oriented ones. In fact, humans are social animals. It is therefore in the cornerstone of our existence and in the best interest for our species to establish flawless social interactions between free and dignified individuals. Had this been achieved, we could all live happier and more fulfilling lives. It seems however that this target is one of the most difficult to achieve, especially in a society where there is a longstanding history of contingencies being set for individual rather than group behavior. For all of these reasons *Beyond Freedom and Dignity* is one of my favorite Skinner's books, of course together with *Verbal Behavior* which is my particular field of interest. 🦋

Introducing the interviewer: Elena Clò is one of the first behavior analysts to get certified in Italy, in 2010. Her work is mainly devoted to serving children and adults with a diagnosis in the autistic spectrum, and teaching ethics in different master programs in Italy.

American Regional Organizational News: 2016 TxABA Conference



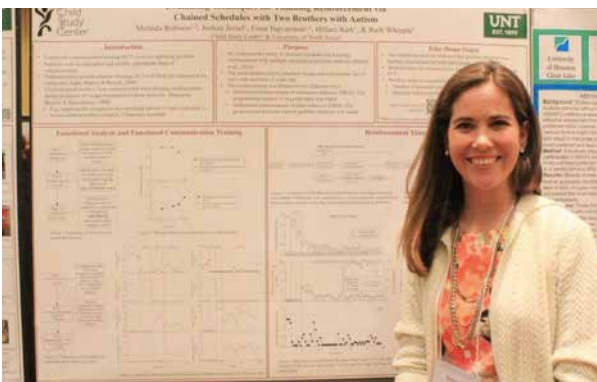
Reported by Desiree Dawson and Rachel Jackson



Presenters: Dr. Tiffany Kodak, Dr. Louis Hagopian, and Dr. Linda LeBlanc



Dr. Jennifer Fritz presenting the "Public Service Contributions to Behavior Analysis in Texas" award to Representative Ron Simmons.



University of North Texas student Melina Robinson presents her research at the student poster session.

The 2016 Regional Conference of the Texas Association for Behavior Analysis (TxABA) was held on March 4-6th, 2016 at the Worthington Renaissance Hotel in downtown Fort Worth, Texas. Attendees included more than 1,000 professional behavior analysts, faculty, students, teachers, caregivers of individuals with development disabilities, and service providers from related disciplines. Local behavior-analytic service providers, including Butterfly Effects, Behavioral Innovations, Therapy & Beyond, and The Shape of Behavior, sponsored the event.

The conference offered five broad tracks for attendees. The General Track covered topics of behaviorism such as philosophy, verbal behavior, topical versus systematic clinical intervention, and punishment. Presenters in the Autism Track covered topics such as ethics, treatment integrity, autism services in post-secondary education, and assessment-based instruction and instructive feedback to improve early intervention outcomes. The Professional Track provided information on licensure, novel applications of behavior analysis, ethics at work, services for adults with severe disabilities, entrepreneurship, and insurance billing. The Special Interest Groups of TxABA collaborated with one another to arrange a new track this year that included topics covering autism and special education, training school professionals to design and implement function-based support, public policy issues, engaging critical societal and global issues, and behavioral safety in heavy industry. Finally, presenters at the Basic and Applied Behavioral Research Track delivered talks on application-driven laboratory research, aversive events and positive reinforcement, the place of behavior analysis in the behavioral neuroscience era, experimental manipulations of delay discounting, and variables affecting the persistence of appropriate communication. TxABA also hosted a special dinner and awards ceremony to honor the 30th anniversary of the association.

The conference provided numerous opportunities for student involvement: Thirty-five students disseminated their research at a poster session.

Each annual TxABA conference continues to grow in popularity and attendance; the well-rounded 2016 conference was yet another record-breaking year. Due to diverse presentation topics, a stylish venue, and an lively 30th anniversary celebration dinner, attendees will remember the 2016 conference for years to come. The 2017 conference will be held on January 26-29th at the Sheraton Austin Hotel at the Capitol in Austin, Texas. PowerPoint slides from many of the presentations given at the 2016 convention can be accessed at: <http://www.txaba.org/conference/conference2016.php>.



Positive Reinforcement Training for Surgeons



Sheila Habarad, MA, BCBA
Seattle, WA

Karen Pryor, a long-standing advocate for positive reinforcement training, is a well-known author and animal trainer. Karen founded the clicker training movement, followed by the Karen Pryor Academy for Animal Training and Behavior, based on operant conditioning techniques pioneered by B. F. Skinner.

Martin Levy is an orthopedic surgeon. He is director of the orthopedic surgery unit at Montefiore Medical Center in Bronx, NY. Surgical teaching typically relies on traditional teaching methods that include criticizing student mistakes. A common saying in the field is, "Without tension there's no retention." In addition to his profession Dr. Levy trained Border Collies for agility contests using Karen Pryor's clicker training. One day when his highly motivated favorite dog wasn't doing what he wanted, he uttered "damn." The dog slunk into an agility tube. It took quite a few minutes before his dog would come out. That day, Dr. Levy said to himself, "If punishment is that harsh for my dog, what is it doing to my interns?" He called Karen Pryor and she went down to meet with him the same week.

Levy, Pryor, and a colleague from TAGteach International, Theresa McKeon, teamed up to teach the resident surgeons basic surgical techniques: positioning surgical instruments, handling power tools, and tying surgical knots. They broke down basic procedures, like drilling into a bone, into steps: how to grip a drill, how to position it at the correct angle, and how to make a "dimple" to stabilize the drill for the final drilling angle. Each correct performance was immediately tagged with a clicker. At first, an instructor would mark their students' performance. Then the residents observed one another and tagged each other's performance on each step. Needless to say, not only did performance improve, the students were pleased with their confidence and success.

On September 14, 2016 Pryor and Levy organized an event *Teaching Skills Using Positive Reinforcement: The Journey from the Skinner Box to the Operating Room* in Bronx, NY. Dr. Julie S. Vargas, the President of the B. F. Skinner Foundation presented at the event. *Operants* will report about this conference in an upcoming issue.



Speakers at the event (L-R): Karen Pryor, Julie Vargas, Ken Ramirez, Hannah Hoch, Mary Niemczyk, Theresa McKeon, Saleem Nicola, Martin Levy, and Carl Binder



Sheila Habarad (left) and Karen Pryor at the B. F. Skinner Foundation's Office earlier this year.



Dr. Martin Levy shows Dr. Julie Vargas equipment that resident surgeons use to learn how to make "dimples" in bones.




Building a Teaching Machine for the New Generation: B. F. Skinner Foundation Needs Your Support!



B. F. Skinner (left) and James H. Holland discussing The Analysis of Behavior.

The *Analysis of Behavior: A Program for Self-Instruction* by James G. Holland and B. F. Skinner introduced behavior analysis to thousands of students. The program produced a superior level of mastery than that obtained from textbooks. The program shaped basic behavioral concepts with small steps that built to teach increasingly complex skills. The 1961 version of the Holland and Skinner program went through several iterations: from mechanical teaching machines with printed disks, to a self-study book, and to a PC-only program that the B. F. Skinner Foundation distributed for several years through its website. For years, the Foundation has received requests for a version that would work on any type of computer and that would provide student evaluations to instructors. Today we are announcing our plans to provide a state-of-the-art interactive version of Holland and Skinner's *The Analysis of Behavior*. The program will work on all Internet-connected devices and run on all operating systems. The program will provide feedback not only to students, but to instructors when students register for courses. The original static figures will be replaced with improved graphics, video, or

animations. The new online platform will also provide detailed data on student performance to enable the Foundation to add helpful features in the future. The Foundation has been fortunate in locating two developers who will work on the code for the project. Both of them have many years of experience in computer-based instruction for civilian and military use. They also clearly understand the science underlying programmed instruction as well as the potential of good internet instruction in promoting behavior analysis world-wide.

The features required for the high level of interactivity and extensive data collection come with a price. We need your help to get the project off the ground. The potential for a truly exemplary internet "teaching machine" is so exciting that the Foundation is mounting a special appeal. Our goal is to raise a minimum of \$52,000 for the first stage of the project. All donations large and small are appreciated and any contribution will bring us closer to this goal. You can send a check to the Foundation, or donate online: bfskinner.org/holland-and-skinner-online/. Please contribute as much as you can! 



B.F. Skinner

B. F. SKINNER FOUNDATION