

Operants

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**from the
president**



Four months after B. F. Skinner died, a letter addressed to him came to his Harvard University office from the publisher of *Verbal Behavior*. In the letter the company, Simon and Shuster, “regretted” that it would no longer be able to publish the book. The reason given was “because of the diminishing demand.” I am pleased to inform you that today the demand for *Verbal Behavior* is not diminishing any longer.

In 1992, we at the B. F. Skinner Foundation published our edition of *Verbal Behavior*. The number of paperback books from that printing lasted for ten years. In 2002, we printed the same number again. This time, we ran out of copies in five years. Sales of the paperback have continued to increase, even though the Foundation now offers a PDF version for ninety-nine cents and eBook versions for under nine dollars. Clearly, the book holds relevance. This edition of *Operants* traces the origins of *Verbal Behavior* and its continuing benefit throughout the world.

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

Arabic Translated by Deena Moustafa

بعد أربعة أشهر من وفاة ب. ف. سكينر، جاءت رسالة على مكتبه بجامعة هارفارد من ناشر كتابه «السلوك اللفظي»، وجاء في نص رسالة الشركة أن شركة وسيمون وشوستر، «تأسف» لعدم قدرتها على نشر الكتاب، والسبب الذي تم تقديمه إنذاك هو «بسبب عدم وجود طلب لمثل هذه الموضوعات». ويسعدني أن أصلح لكم هذا الرد وأخبركم بأن طلب السلوك اللفظي لم يتضاءل أبداً. في عام 1992، نشرت مؤسسة B. F. سكينر طبعتنا الخاصة من «السلوك اللفظي»، وقد نفذت النسخ الورقية من تلك الطباعة في غضون عشر سنوات. في عام 2002، طبعنا نفس العدد مرة أخرى، وفي هذه المرة، نفذت جميع النسخ في غضون خمس سنوات. وقد وصلت مبيعات النسخ في الزيادة منذ ذلك الحين، على الرغم من أن المؤسسة تقدم الآن نسخة PDF بتكلفة تبلغ فقط تسع وتسعون سنتا، كما أصدرت نسخ من الكتب الإلكترونية بأقل من 9 دولار. ومن ثم فإنه من الواضح أن الكتاب يحمل أهمية كبيرة، هذه الطبعة من Operants تحذو حذو كتاب السلوك اللفظي «Verbal Behavior» في تقديم المساعدة والإفادة لجميع أنحاء العالم.

Chinese Simplified Translated by Coco Liu

斯金纳 (Skinner) 去世后的四个月之后，一封从“语言行为”出版社写给他的信寄到了他的哈佛大学办公室。该信中，西蒙和舒斯特，“很遗憾”，告诉他不能再继续出版这本书。给的理由是“因为需求减少”。今天我很高兴的重新向你们宣布，现在对“语言行为”这本书的需求完全不再是减少的。

在1992年，我们在B.F. Skinner 斯金纳基金会出版了我们的“语言行为”的版本。印刷的平装书数量持续了十年。在2002年，我们再次翻印了同样的数量。这一次，我们在五年内就用完了。尽管基金会现在提供99美分的PDF版本和9美元以下的电子书版本，平装本的销售额仍在持续增长。显然，这本书是使用价值的。“Operants”这个版本的追溯了“语言行为”的起源并在世界各地持续的帮助大家。

Chinese Traditional Translated by Coco Liu

斯金納 (Skinner) 去世後的四個月之後，一封從“語言行為”出版社寫給他的信寄到了他的哈佛大學辦公室。該信中，西蒙和舒斯特，“很遺憾”，告訴他將不能再繼續出版這本書。給的理由是“因為需求減少”。今天我很高興的重新向你們宣布，現在對“語言行為”這本書的需求完全不再是減少。

在1992年，我們在B.F. Skinner 斯金納基金會出版了我們的“語言行為”的版本。印刷的平裝書數量持續了十年。在2002年，我們再次翻印了同樣的數量。這一次，我們在五年內就用完了。儘管基金會現在提供99美分的PDF版本和9美元以下的電子書版本，平裝本的銷售額仍在持續增長。顯然，這本書是使用價值的。“Operants”這個版本的追溯了“語言行為”的起源並在世界各地持續的幫助大家。

Czech Translated by Helena Vadurova

Čtyři měsíce po smrti B. F. Skinnera mu na Harvardovu univerzitu přišel dopis od nakladatele knihy Verbální chování. V tomto dopise společnost Simon a Schuster „litovala“, že nemůže nadále vydávat tuto knihu. Důvodem byl „klesající zájem“. S potěšením oznamuji, že v současné době zájem o Verbální chování neklesá.

V roce 1992 jsme v Nadaci B. F. Skinnera připravili vlastní vydání Verbálního chování. Počet kopií, které jsme tehdy vytiskli, vystačil na deset let. V roce 2002 jsme stejný počet kopií vytiskli znovu. Tentokrát nám však knihy došly za 5 let. Počet prodaných výtisků se stále zvyšuje, přestože Nadace nyní nabízí verzi ve formátu PDF za 99 centů a eBook za méně než 9 dolarů. Tato kniha si jasně udržuje svůj význam. V tomto vydání Operants se vydáváme ke kořenům Verbálního chování a věnujeme se tomu, jak neustále nachází uplatnění všude na světě.

Dutch Translated by Frans van Haaren

Vier maanden nadat B.F. Skinner was overleden, arriveerde er een brief van de uitgever van Verbal Behavior op zijn kantoor op Harvard University. In die brief 'betreurde' het bedrijf het feit dat het zich niet langer kon veroorloven om het boek te drukken. Ze zeiden 'omdat er verder weinig vraag naar was' Het verheugt mij U te kunnen laten weten dat de vraag naar Verbal Behavior niet langer aan vermindering onderhevig is.

In 1992, publiceerden wij, de B.F. Skinner Foundation, onze uitgave van Verbal Behavior. Het duurde tien jaar voordat de paperbacks van die druk waren uitverkocht. In 2002, drukten wij opnieuw hetzelfde aantal boeken. Deze keer, waren wij binnen vijf jaar uitverkocht. Wij verkopen steeds meer paperbacks ondanks het feit dat de Foundation nu een PDF versie verkoopt voor negen-en-negentig cent en een eBook voor minder dan negen dollar. Het is duidelijk dat het boek relevant blijft. Deze editie van Operants traceert de oorsprong van Verbal Behavior en de blijvende invloed van het boek over de hele wereld.

French Translated by MarieCeline Clemenceau

Quatre mois après la mort de B. F. Skinner, l'éditeur de Verbal Behavior lui adressait une lettre à son bureau de l'Université de Harvard. Dans la lettre, l'entreprise, Simon et Shuster, "regrettait" de ne plus pouvoir publier le livre. La raison invoquée était «en raison de la diminution de la demande». Je suis heureuse de vous informer que la demande pour Verbal Behavior n'est plus en baisse.

En 1992, nous, à la Fondation B. F. Skinner, avons nous-mêmes publié notre édition de Verbal Behavior. Le nombre de livres issus de cette impression a duré dix ans. En 2002, nous avons de nouveau imprimé le même nombre. Cette fois, nous avons manqué de copies en cinq ans. Les ventes du livre en format papier ont continué d'augmenter, même si la Fondation offre maintenant une version PDF pour quatre-vingt-dix-neuf centimes et des versions eBook pour moins de 9 dollars. Clairement, le livre est pertinent. Cette édition d'Operants retrace les origines de Verbal Behavior et ses avantages continus à travers le monde.

German Translated by Natalie Werner

Vier Monate nachdem B.F. Skinner verstorben war, kam ein an ihn adressierter Brief in seinem Büro der Harvard Universität vom Verleger von Verbal Behavior an. In dem Brief informierte ihn das Unternehmen, Simon und Shuster, dass sie „bedauern“, das Buch nicht länger verlegen zu können. Der Grund hierfür sei die „verringerte Nachfrage“. Ich bin froh Ihnen mitteilen zu können, dass die Nachfrage nach Verbal Behavior heute nicht länger rückläufig ist.

1992 haben wir, bei der B.F. Skinner Foundation, unsere Ausgabe von Verbal Behavior veröffentlicht. Die Anzahl der Taschenbücher von diesem Druck reichte für zehn Jahre. 2002 haben wir die gleiche Anzahl noch einmal gedruckt. Dieses mal gingen uns die Bücher in fünf Jahren aus. Die Verkäufe der Taschenbücher haben weiterhin zugenommen, obwohl die Foundation nun eine PDF-Version für 99 Cent und ein eBook für unter 9 Dollar anbietet. Eindeutig besitzt das Buch Relevanz. Diese Ausgabe von Operants verfolgt die Entstehung von Verbal Behavior und dessen fortlaufenden weltweiten Nutzen.

Hebrew Translated by Shiri Ayvazo

ארבעה חודשים לאחר ש.פ. סקינר נפטר, הגיע למשרדו באוניברסיטת הארוורד מכתב מן המוציא לאור של הספר התנהגות מילולית (Verbal Behavior). במכתב זה, החברה סימון ושוסטר, "הצטערה" שלא יוכלו יותר להוציא לאור את הספר. הסיבה שצויינה הייתה "בגלל דרישה מועטה". אני מרוצה לתקן ולומר כי היום הדרישה להתנהגות מילולית איננה מועטה כלל.

בשנת 1992, אנו בקרן ב.פ. סקינר, הוצאנו לאור את המהדורה שלנו להתנהגות מילולית. מספר הספרים בכריכה רכה מן ההדפסה היא החזיקו למשך עשר שנים. בשנת 2002, הדפסנו שוב את אותה כמות ספרים. הפעם, נגמרו לנו העותקים בחמש שנים. המכירות מן הספרים בכריכה המשיכו לעלות, על אף שהקרן מציעה כעת גרסת PDF עבור 99 סנט, וגרסת ספר אלקטרוני בפחות מ 9 דולרים. נראה ברור כי הרלוונטיות של הספרים עדיין בעינה. המהדורה הנוכחית של אופרנטס עוקבת אחר המקורות של התנהגות מילולית ותרומתו המתמשכת בכל העולם.

Hellenic (Greek) Translated by Katerina Dounavi

Τέσσερις μήνες αφού πέθανε ο B. F. Skinner, ένα γράμμα ήρθε για αυτόν στο γραφείο του στο Πανεπιστήμιο του Harvard από τον εκδότη του Λεκτική Συμπεριφορά (Verbal Behavior). Στο γράμμα, η εταιρεία, Simon και Shuster, "λυπόταν" που δε θα ήταν πια σε θέση να δημοσιεύσει το βιβλίο. Ο λόγος που δόθηκε ήταν "εξαιτίας της μειωμένης ζήτησης." Είμαι στην ευχάριστη θέση να σας πληροφορήσω ότι σήμερα η ζήτηση για το Λεκτική Συμπεριφορά δε μειώνεται πια.

Το 1992, εμείς στο Ίδρυμα B. F. Skinner δημοσιεύσαμε τη δική μας έκδοση του Λεκτική Συμπεριφορά. Ο αριθμός των βιβλίων με μαλακό εξώφυλλο από αυτή την εκτύπωση διήρκεσε δέκα χρόνια. Το 2002, εκτυπώσαμε ξανά τον ίδιο αριθμό. Αυτή τη φορά, ξεμείναμε από αντίγραφα σε πέντε χρόνια. Οι πωλήσεις του βιβλίου με μαλακό εξώφυλλο συνεχίζουν να αυξάνονται, παρότι το Ίδρυμα τώρα προσφέρει μια έκδοση PDF για ενενήντα εννέα λεπτά και εκδόσεις ηλεκτρονικού βιβλίου για λιγότερα από 9 δολάρια. Ξεκάθαρα, το βιβλίο είναι σημαντικό. Αυτή η έκδοση των Operants πραγματοποιείται την προέλευση του Λεκτική Συμπεριφορά και το συνεχιζόμενο όφελός του ανά τον κόσμο.

Icelandic Translated by Kristjan Guðmundsson

Fjórum mánuðum eftir andlát B. F. Skinners var bréf stílað á hann á skrifstofu hans við Harvard háskólann. Bréfið var frá útgefanda bókarinnar Verbal Behavior. Í því bréfi sagðist fyrirtækið, Simon og Shuster, "því miður" verða að tilkynna að þeir gætu ekki lengur gefið bókina út. Gefin var ástæðan "vegna minnkandi sölu." Það er mér mikil ánægja að tilkynna ykkur að þetta hefur nú alveg snúist við varðandi Verbal Behavior.

Árið 1992, þá gáfum við í B. F. Skinner Foundation út okkar eigin útgáfu af Verbal Behavior. Vasabrotsútgáfa þeirrar bókar entist í tíu ár. Árið 2002, prentuðum við sama fjölda aftur. Í seinna skiptið dugði sú útgáfa aðeins í fimm ár. Sala vasabrotsútgáfunnar hefur haldið áfram að aukast, þrátt fyrir að Stofnunin býður nú upp á PDF útgáfu á níftuogníu sent og eBook útgáfu fyrir minna en 9 dollara. Greinilegt er að bókinn skiptir enn máli. Þessi útgáfa af Operants rekur upphaf bókarinnar Verbal Behavior og þær framtíðarframarir sem hún mun hafa um heim allan.

Italian Translated by Anna Luzi

Quattro mesi dopo la morte di B. F. Skinner, arrivò presso il suo studio all'università di Harvard, una lettera a lui indirizzata da parte dell'Editore di Verbal Behavior. Nella lettera, la Casa Editrice Simon e Shuster, "si rammaricava" del fatto che non avrebbe più potuto pubblicare il libro. La ragione addotta consisteva allora in "un calo della domanda" da parte del mercato. Sono lieta di informarvi che oggi la domanda di Verbal Behavior è tutt'altro che destinata a calare.

Nel 1992, noi della B.F. Skinner Foundation abbiamo pubblicato una nostra edizione di Verbal Behaviour. Il numero di libri stampati e pubblicati in edizione economica in quell'occasione è stato sufficiente a coprire la domanda per dieci anni. Nel 2002, abbiamo stampato di nuovo lo stesso numero di copie. Questa volta sono finite in cinque anni. Le vendite dell'edizione economica sono continuamente aumentate, anche se la Fondazione offre ora un'edizione in formato elettronico in PDF per novantanove centesimi ed edizioni in formato eBook per meno di 9 dollari. E' chiaro che si tratta di un libro importante.

Questo numero di Operants ripercorre le origini di Verbal Behavior e dell'influenza che continua ad avere in tutto il mondo.

Japanese Translated by Naoki Yamagishi

B.F.スキナーが亡くなって4か月後、書籍「言語行動」の出版社からハーバード大学にスキナー宛の手紙が届きました。その出版社のシモンとシャスターは、その手紙の中でその本をもう出版できないことについて「遺憾」の意を示しました。その理由は「需要の減少」でした。私は「言語行動」の需要が今日まったく減少していないとよこんで訂正したいと思います。

1992年にスキナー財団は、財団版の「言語行動」を出版しました。その版のペーパーバックは10年続きました。そして2002年に同量の本を再び印刷し、そのときは5年で売り切れしました。ペーパーバックの売上は増加し続けています。99セントでPDF版を提供し、9ドル以下で電子書籍版を提供しているにもかかわらずです。その本には確かに妥当性があります。この版の広報誌Operantsは、「言語行動」の起源を突き止め、世界中に利益をもたらします。

Korean Translated by Theresa Yunhee Shin

B. F. Skinner의 임종 후, 4개월쯤, Harvard 대학의 Verbal Behavior의 발행자로부터 편지 한 통이 배달되어 왔습니다. 그 편지에서 Simon 과 Shuster는 더이상 이 책을 출간할 수 없어서 “유감”이라고 했습니다. 그 이유는 “ 수요가 저하되었기 때문”이라는 것이었습니다. 저는 오늘날 Verbal Behavior의 수요가 더이상 저하되지 않고있으니 그분의 마음이 달라지길 바랍니다.

1992년, B. F. Skinner재단에서 우리는 우리의 편집본인 Verbal Behavior 를 발간하였습니다. 10년동안 그때 인쇄되었던 문고판이 지속되었고, 2002년에 우리는 다시 같은 수의 문고판을 인쇄하였습니다. 이번에는 5년안에 인쇄본이 소진되었습니다. 심지어 재단에서 지금 99센트의 PDF버전과 9달러의 eBook으로 제공되고 있음에도 불구하고 문고용판매는 증가를 계속하고 있습니다. 명백히, 책과 관련이 있습니다. Operants 이번 호는 원작 Verbal Behavior의 발자취를 따라가며, 전 세계에서 일어나는 지속적인 이익에 대해서 알아보는 것입니다.

Norwegian Translated by Karoline Giæver Helgesen

Fire måneder etter B. F. Skinner sin død, mottok man ved hans kontor på Harvard University et brev adressert til han fra forlaget som ga ut Verbal Behavior. I brevet «beklaget» selskapet, Simon and Shuster, at de ikke lenger ville ha mulighet til å publisere boken. Begrunnelsen var «synkende etterspørsel». Det gleder meg å kunne meddele at etterspørselen etter Verbal Behavior per i dag ikke lenger er synkende.

I 1992 publiserte vi ved B. F. Skinner Foundation vår egen utgave av Verbal Behavior. Dette opplaget med paperback bøker dekket etterspørselen i ti år. I 2002, trykket vi opp det samme antallet igjen. Denne gangen gikk vi tom for bøker innen fem år. Salget av paperbackboken har fortsatt å øke, selv om stiftelsen nå tilbyr en PDF utgave til 99 cent (rundt 8 kroner), og e-bøker til under 9 dollar (rundt 75 kroner). Boken er åpenbart fortsatt relevant. Denne utgaven av Operants tar for seg Verbal Behavior sin opprinnelse og dens fortsatte innflytelse verden over.

Polish Translated by Monika Suchowierska-Stephany

Cztery miesiące po śmierci B. F. Skinera, na jego adres na Uniwersytecie Harvardzkim został dostarczony list od wydawcy książki pt. „Verbal Behavior”. W tym liście firma wydawnicza – Simon i Shuster – wyraziła żal z powodu braku możliwości dalszej publikacji dzieła Skinera. Przyczyną miał być „zmniejszający się popyt”. Mam przyjemność poinformowania Państwa, że obecnie zapotrzebowanie na „Verbal Behavior” już nie maleje.

W roku 1992, Fundacja B. F. Skinera opublikowała własną edycję „Verbal Behavior”. Liczba egzemplarzy tego nakładu wystarczyła na 10 lat. W 2002, znowu wydrukowaliśmy taką samą liczbę książek. Tym razem, wystarczyło ich na 5 lat. Sprzedaż „Verbal Behavior” w miękkiej okładce cały czas wzrasta, mimo tego, iż Fundacja oferuje teraz wersję w formacie PDF za 99 centów i eBooka za mniej niż 9 dolarów. Najwyraźniej, dzieło Skinera zachowuje duże znaczenie. Obecne wydanie „Operants” bada źródła „Verbal Behavior” i przedstawia wciąż istniejące korzyści publikacji, uznawane w wielu krajach świata.

Portuguese Translated by Monalisa Leão

Quatro meses depois que B. F. Skinner morreu, uma carta endereçada a ele chegou no escritório da Universidade de Harvard da editora de Verbal Behavior. Na carta, a empresa, Simon e Shuster, “lamentou” que não seria mais capaz de publicar o livro. A razão dada foi “devido à diminuição da procura”. Tenho o prazer de informar você que hoje a busca por Verbal Behavior não está diminuindo mais.

Em 1992, nós, na Fundação B. F. Skinner, publicamos nossa edição do Verbal Behavior. A quantidade de livros em brochura dessa impressão durou dez anos. Em 2002, nós imprimimos o mesmo número novamente. Desta vez, ficamos sem cópias em cinco anos. As vendas do livro impresso continuaram a aumentar, mesmo que a Fundação ofereça agora uma versão em PDF por noventa e nove centavos e versões de e-books por menos de 9 dólares. Claramente, o livro tem relevância. Esta edição de Operantes traça as origens do Verbal Behavior e seu benefício contínuo em todo o mundo.

Russian Translated by Alexander Fedorov

Спустя четыре месяца после смерти Б. Ф. Скиннера в его гарвардский офис пришло адресованное ему письмо от издателя «Вербального поведения». В этом письме компания Simon and Shuster «выражала сожаление» по поводу того, что она больше не сможет издавать эту книгу. В качестве причины было названо «падение спроса». И я рада сообщить вам, что в настоящее время спрос на «Вербальное поведение» больше не падает.

В 1992 году мы в Фонде Б. Ф. Скиннера опубликовали наше издание «Вербального поведения». Изданных тогда книг хватило на десять лет. В 2002 году мы вновь издали тоже же их количество. И в этот раз экземпляров хватило на пять лет. Продажи печатных книг продолжают расти, даже несмотря на то, что теперь Фонд предлагает PDF-версии за 99 центов и версии в формате электронных книг менее чем за 9 долларов. Очевидно, что книга сохраняет свою актуальность и значимость. Этот выпуск «Оперантов» посвящен происхождению труда «Вербальное поведение» и тому положительному влиянию, которое он продолжает оказывать по всему миру.

Spanish Translated by Kenneth Madrigal and Gonzalo Fernández

Cuatro meses después de la muerte de B.F. Skinner, una carta dirigida a él llegó a su oficina en la Universidad de Harvard, la cual tenía como remitente la editorial del libro de Conducta Verbal. La editorial Simon and Schuster, "lamentaba" no poder continuar publicando dicho libro, esto debido a "una disminución en la demanda". Me complace informarles que actualmente ya no existe una disminución en la demanda del libro de Conducta Verbal.

En 1992 nosotros, en la Fundación B.F. Skinner, publicamos nuestra edición de Conducta Verbal. El número de libros impresos únicamente duró diez años. En el 2002, volvimos a imprimir la misma cantidad; en esta ocasión los libros se agotaron en cinco años. Aun cuando la Fundación también ofrece versiones del libro en PDF o como eBook (con un precio de \$0.99 y \$9.00 usd. respectivamente), la venta de libros impresos continúa en aumento; claramente, el libro sigue siendo relevante. En la edición actual de Operants se realiza un análisis de los orígenes del libro de Conducta Verbal y sus constantes contribuciones alrededor del mundo.

Swedish Translated by Dag Strömberg

Fyra månader efter B. F. Skinners bortgång kom ett brev adresserat till honom till hans kontor på Harvarduniversitetet från utgivaren av Verbal Behavior. I brevet "beklagade" förlaget, Simon och Shuster, att de inte längre skulle kunna ge ut boken. Skälet som angavs var "på grund av minskande efterfrågan". Jag har glädjen att informera er om att efterfrågan på Verbal Behavior nu för tiden inte längre minskar.

År 1992 publicerade vi på B. F. Skinner Foundation vår utgåva av Verbal Behavior. Antalet pocketböcker från den tryckningen räckte i tio år. År 2002 tryckte vi lika många igen. Den här gången tog upplagan slut på fem år. Försäljningen av pocketboken har fortsatt att öka, trots att stiftelsen nu erbjuder en PDF-version för nittionio cent och e-bokversioner för under 9 dollar. Tydligt upprätthålls bokens relevans. Denna utgåva av Operants spårar Verbal Behaviors ursprung och dess fortsatta nytta runt om i världen.

Thai Translated by Sirima Na Nakorn

เดือนหลังจาก ดร. บี เอฟ สกินเนอร์ เสียชีวิตลง มีจดหมายจากสำนักพิมพ์ของหนังสือ "เวอร์เบล บีเฮวีเออร์" (Verbal Behavior) มาถึงสำนักงานของท่านที่มหาวิทยาลัยเวิร์ด จดหมายดังกล่าวมาจากบริษัท "ไซมอน แอนด์ ชูสเตอร์" แสดงความเสียใจที่ไม่สามารถพิมพ์หนังสือเล่มนี้ได้ เพราะ "ความต้องการหนังสือนี้ลดลง" วันนั้นดิฉันมีความยินดีที่จะแจ้งให้ทุกท่านทราบว่า ปัจจุบันความต้องการหนังสือนี้ ไม่ได้ลดลงอีกต่อไปแล้ว

ในปี ค.ศ. 1992 มูลนิธิ บี เอฟ สกินเนอร์ พิมพ์หนังสือ "เวอร์เบล บีเฮวีเออร์" (Verbal Behavior) รุ่นที่มีปกอ่อน ออกมาจำนวนหนึ่ง สต็อกรุ่นนี้อยู่นาน 10 ปี ในปี ค.ศ. 2002 เราพิมพ์รุ่นใหม่ออกมาในจำนวนเท่ากัน แต่คราวนี้ขายหมดภายใน 5 ปี จะเห็นได้ว่ามียอดขายของหนังสือเล่มนี้เพิ่มขึ้นอย่างต่อเนื่อง ถึงแม้ว่า มูลนิธิฯ จะมีฉบับที่เป็นแฟ้มพีดีเอฟ ให้อ่านในราคา 99 เซ็นต์ และยังมีเป็นฉบับ eBook ให้อ่านในราคา 9 ดอลลาร์ แสดงให้เห็นว่า หนังสือที่เป็นรูปเล่มยังคงมีความหมายและความสำคัญอยู่

Operants ฉบับนี้ ตามรอยที่มาของหนังสือ "เวอร์เบล บีเฮวีเออร์" (Verbal Behavior) และ ประโยชน์ที่ทั่วโลกได้รับอย่างต่อเนื่อง

Turkish Translated by Yeşim Güleç-Aslan

B. F. Skinner'ın ölümünden dört ay sonra, Harvard Üniversitesindeki ofisine "Verbal Behavior" kitabının yayımcısından bir mektup geldi. Mektupta, Simon&Shuster şirketi, bu kitabı artık basamayacaklarına dair üzüntülerini dile getirmekteydiler. Bunun nedeni ise kitaba azalan talep olarak belirtilmekteydi. Günümüzde ise "Verbal Behavior" kitabına talebin artık azalmadığını bildirmekten memnuniyet duyuyorum.

1992 yılında, biz B. F. Skinner Vakfı olarak "Verbal Behavior" kitabını bastık. Bu baskı 10 yıl sürdü. 2002 yılında, aynı kitabı tekrar bastık. Bu kez beş yıl içinde kopyalarımız bitti. Vakfın, PDF versiyonunu 99 sente ve e-kitap versiyonunu dokuz doların altında sunmasını rağmen, basılan kitabın satışları artmaya devam etti. Net olarak, kitap ilgi görmektedir. Operants'ın bu sayısı, "Verbal Behavior" kitabının köklerinin ve dünyaya çapında süregelen faydalarının izleri sürüyor.

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We would like to thank all contributors to this issue. One of the most difficult parts of writing for *Operants* is that it is supposed to be in the spirit of Skinner’s writings: Of interest to the field, but also written without heavy citations and references. In most articles intellectual credit to others is given not by citing and referencing specific studies or articles/books, but rather through discussing the “big idea” or “concept”, and naming the person/affiliation. In this way, then, the intellectual credit is provided while still writing for a wider audience. Especially today we would like to continue to advance the relationship between basic and applied science, and make that available to the public.

Operants is produced by the B. F. Skinner Foundation. The opinions reflected in this *Operants* do not necessarily represent the views of the Foundation.

We reserve the right to edit all submissions for factual and scientific accuracy, however, as a rule, we preserve the author’s grammar and punctuation.

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Table of Contents

From the President 2

From the Guest Editor 8

A Graphical Presentation of *Verbal Behavior* Influence
James Carr, PhD, BCBA-D 10

B. F. Skinner’s Analysis of Verbal Behavior:
A Chronicle (Part II)
Ernest A. Vargas, PhD; Julie S. Vargas, PhD;
Terry J. Knapp, PhD 11

Skinner’s Book *Verbal Behavior*: It Is Certainly About Time
Mark L. Sundberg 17

A Brief History of the Teaching of Verbal Behavior at
Western Michigan University
Barbara E. Esch and John W. Esch 21

The Experimental Analysis of Verbal Behavior Takes Off
Anna Ingeborg Petursdottir 23

On Skinner’s *Notebooks* and *Verbal Behavior*
David Roth 27

Technology for Verbal Behavior Analyses
Bill Potter, PhD, BCBA 30

Bidirectional Naming and Verbal Behavior: An Important, Yet
Challenging Research Agenda
Caio F. Miguel, PhD, BCBA-D 32

The Cumulative Progress of Skinner’s Functional Analysis of
Verbal Behavior
Sam Leigland, PhD 35

“Conditioning the Behavior of the Listener” Redux
Henry D. Schlinger, Jr., PhD 37

Skinner on Speaking the Truth
Ted Schoneberger, MS, BCBA 42

Special Issue of *Operants on Verbal Behavior*: Introductory Remarks

Dave Palmer, PhD
Smith College



David C. Palmer studied inter-response times and conditioned reinforcement in pigeons at the University of Massachusetts under John Donahoe in the early 1980s. Upon graduation, he took a job teaching statistics and behavior analysis at Smith College, where he remains today.

*His interests in behavior analysis are broad, but his main contributions have all been attempts to extend Skinner's interpretive accounts of human behavior, particularly in the domains of language, memory, problem solving, and private events. He remains convinced that behavioral principles offer an adequate foundation for interpreting such phenomena. Together with John Donahoe, he authored the text, *Learning and Complex Behavior*, which was an attempt to justify such optimism.*

Operants invited him to edit this special issue.

On the occasion of the 60th anniversary of the publication of *Verbal Behavior, Operants* is devoting most of this issue to retrospective articles on the book and its subject matter written by a selection of current leaders in the field. Skinner's contributions to the science of behavior began, appropriately, in the laboratory. His methodological innovations achieved an unprecedented level of experimental control. That control revealed the extraordinary lawfulness and orderliness of operant behavior. *The Behavior of Organisms* summarized this early work, and it became the foundation of an empirical enterprise that has flourished for nearly 80 years. But operant behavior outside the laboratory is the integration of the effects of many concurrent variables, salient and subtle, fleeting and enduring, potent and weak, and under such conditions experimental control is usually impossible. As a result, the orderliness of human behavior is seldom conspicuous to the casual observer, and many scholars have flown to other paradigms in search of short-cuts to an understanding of complex behavior. But there are no short-cuts; the complexity of controlling variables in behavior does not go away by ignoring it.

Verbal behavior is a particularly formidable subject matter, and controlling variables are especially complex. Moreover, ethical considerations prevent our establishing tight experimental control over the histories, current environments, and motivational variables of our fellow humans. Skinner's response to this difficulty followed the precedent of generations of physicists, geologists, cosmologists, evolutionary biologists, and others before him: When faced with phenomena that are outside the reach of experimental analysis, scientists interpret the available data in light of principles that have been derived from a rigorous experimental analysis in the laboratory. In following this path, Skinner showed how the umbrella of behavioral principles can extend to the full panorama of behavior, non-verbal and verbal, human and non-human.

In addition to laying claim to a subject matter, *Verbal Behavior* is an extraordinarily thorough and erudite book whose endless riches justify repeated readings. Those of us who teach from it every year commonly remark that we learn something new every time. It has served as the foundation for both theoretical extensions and an expanding domain of research and practical application. The papers in this issue touch on some of these extensions and applications.

Six of the contributions are primarily, or partly, historical: Jim Carr opens with a pictorial representation of different measures of the book's influence. In the following paper, Julie and Ernie Vargas and Terry Knapp discuss the biographical and conceptual background to the writing of the book. It was not an idle or whimsical exercise; Skinner labored over it for 23 years! Mark Sundberg takes us through the accelerating growth of empirical and conceptual work from the earliest MABA conferences, to behavioral monographs, to a newsletter, to the founding of the journal, *The Analysis of Verbal Behavior*. Of course, the considerable influence of *Verbal Behavior* on behavior science today owes much to the long program of study of the book at Western Michigan University under the direction of Jack Michael. Barb and John Esch recount the history of this enterprise through interviews with

Jack and many of his former students, students who comprise virtually a Who's Who of the field of verbal behavior. Anna Petursdottir's paper covers the recent history of empirical work; she documents a dramatic acceleration of work within the last decade. David Roth has mined Skinner's *Notebooks* for his episodic entries on verbal behavior. Most of these notes were written after the publication of *Verbal Behavior*, so they tell us something about the topics that Skinner continued to work on in his later years.

The next two papers have an empirical flavor. Bill Potter offers a piece on the potential role of modern technology on the empirical investigation of verbal behavior. He illustrates the point with an example of the computer-assisted extraction of autoclitic frames from transcripts of spoken exchanges. Caio Miguel follows with a summary of his on-going program of research on bi-directional naming, the complex repertoire of speaker and listener behavior that typically emerges in a single individual with a history of exposure to common verbal contingencies.

The last three articles are conceptual in nature. Sam Leigland points to the inductive nature of empirical work in the analysis of behavior and traces the expanding scope of such work to ever more complex behavior, including

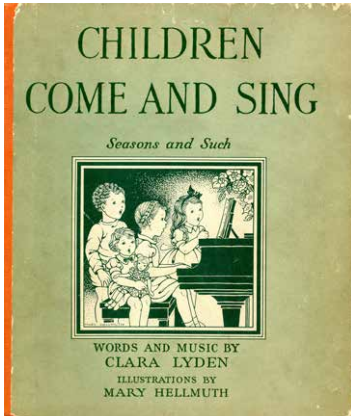
relations of equivalence, opposition, etc., as well as the transformation of stimulus function. Consideration of such complex phenomena has led to some new theoretical interpretations of verbal behavior with new technical terms. These are indeed formidable topics, but in the following article, Hank Schlinger shows how Skinner's set of interpretive tools can embrace the full range of such phenomena without invoking new principles or terms. Rather, we need to acknowledge the important role of the verbal behavior of the listener in mediating such complex behavior. Ted Schoneberger closes the set with an essay on Skinner's epistemology (a topic close to Skinner's heart). He disposes of claims by other behavior analysts that Skinner's views could be embraced by one or another of the standard philosophical doctrines of truth. He closes with the observation that the conceptual foundations of Skinner's behaviorism is the foundation of the field, a position I think we can all endorse.

Taken together, the articles will remind us why Skinner predicted that *Verbal Behavior* would prove to be his most important book. I believe he would have been delighted if he could have foreseen how widely his book is read today and how influential it has been in guiding our interpretations of complex behavior. 🌊

Inspirations for *Verbal Behavior*

VB
LX

archives



HOLD YOUR HAT ON TIGHT



In *Verbal Behavior* (p. 197) Skinner writes:

"A young girl who had learned to sing a song containing the sentence *Run, run, run, with all your might* later sang this as *March, march, march, with all your might*. This is the kind of erroneous recall which suggests that what she learned in the first place was the "idea," and that she could express it in another way later. But a clear intraverbal connection between *march* and *run* is established by an English-speaking community. (In this particular case there were other variables which could have strengthened *march*. The song was called *March Wind*, and the child was accustomed to march about while singing it.)"

"A young girl" was, of course, Skinner's daughter Julie (pictured on the photo with her sister Deborah, left; and father, center). Above is her songbook with *March Winds*. From the family archives. 🌊



A Graphical Presentation of *Verbal Behavior* Influence



James E. Carr, PhD, BCBA-D

Verbal Behavior

Selected Measures of Quantitative Impact

10,034

literature citations
to **Verbal Behavior**



21,000

scholarly works that
mention **verbal
behavior + Skinner**

153,000

Search engine results
for **verbal behavior***

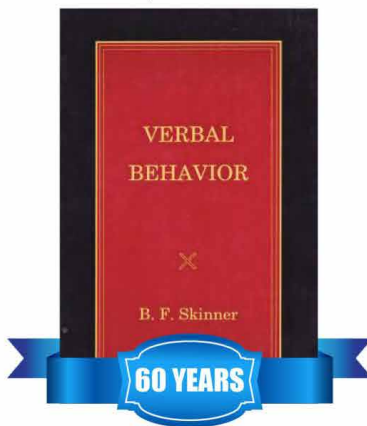


20,600

Search engine results
for **intraverbals***

30,000+

copies sold



1,840

Instances of the term
verbal behavior in
JABA, JEAB, & TBA



39 Years

of the **Verbal Behavior
Special Interest Group**



30,100

Search engine results
for **mands***

35 Years

of publication



36,200

Search engine results
for **tacts***

413 Articles

published

Notes: Data obtained in July 2017
* = keyword + Skinner

B. F. Skinner's Analysis of Verbal Behavior: A Chronicle, Part II

Ernest A. Vargas, Julie S. Vargas, Terry J. Knapp*

From Language to Verbal Behavior 1936 to Late 1940s

In 1936 and 1937, Skinner was working on *The Behavior of Organisms*. This work presented the foundations of his science. It did not as such establish it, for the full scope of his behavioral theory was not seen, even by Skinner himself. (It was construed, at least by other behavioral scientists, as one of the theories of learning of that time, to be taken seriously along those of a half dozen others.) But it did provide the concept of the operant, and its experimental underpinnings. His theory further related this two-term postcedent relation to other behavioral processes such as discrimination and induction. The two-term contingency relation with its postcedent control thoroughly revised the analytic frame in which behavioral phenomena were interpreted. It radically departed from the stimulus-response formulation, based on antecedent control, that had dominated American psychology. Skinner took this postcedent selectionistic relation and built all later formulations upon it, including his interpretative analysis of language.

As he had before, Skinner concurrently pursued both the experimental foundations of his science and its extension to his examination of verbal behavior. He evidently found it an effort to do both at the same time. He expressed some degree of frustration at not being able to put the basic formulation in place and then move on to its explanatory application of language. As he wrote to Fred Keller towards the end of writing *The Behavior of Organisms*, "I'm afraid I'm going to skimp on the drive chapter out of desperation to get the damn book finished. I'm very anxious to get to work on language. Have had a seminar on it this quarter and various people are interested here" (Skinner, April 19, 1937). The "various people here" were evidently members of his own department at Minnesota, for in the summer of 1937, the year prior to publication of *The Behavior of Organisms*, and in the summer of 1939, the year following the publication of *The Behavior of Organisms*, he taught a course called "Psychology of Literature." As he stated in his autobiography, he seemed to have gotten distracted into a psychological approach to language. The course covered, among other topics, "Fundamental processes involved in the creation and enjoyment of literary works... . Psychological basis of style; nature and function of metaphor; techniques of humor, etc." In that summer of 1939, he also taught a radio course in the Psychology of Literature and before that, had given a lecture to the Women's Club of Minneapolis. Such activity implies an effort on his part to get his point of view across to the general public. But it was still largely a traditional point of view, for in his courses and lectures he did such analyses as "Oedipal mother-love in *Margaret Ogilvy*" and "Oedipal father-hatred in *The Brothers Karamazov*." During this same period, he published an article on alliteration in Shakespeare. Interestingly enough, the article's conceptual point of attack was statistical. Little of his theoretical framework shows itself. It could have been written by anyone who had a tendency to count the use of words in poetic discourse to understand their significance. It comes across as a structural analysis. But it did echo a minor note in his analysis of



Ernest Vargas



Julie Vargas



Terry Knapp

Dr. Ernest A. Vargas is a behaviorologist and a director of the B. F. Skinner Foundation. His primary interests are in the history of science and in behavioral theory. Dr. Vargas's recent article B. F. Skinner's Theory of Behavior appeared in the European Journal of Behavior Analysis (Volume 18, 2017 - Issue 1).

Julie S. Vargas is president of the B. F. Skinner Foundation. She began her professional life as an elementary school teacher, and has kept her interest in public education from that time on. After receiving her doctorate, she taught at West Virginia University, working with practicing teachers and with undergraduate education majors. Her publications include Behavior Analysis for Effective Teaching (2nd Ed. Routledge, 2013). She is currently working on a biography of her father, B. F. Skinner.

Terry Knapp earned his BA degree in philosophy and BS degree in psychology at the University of Iowa where he heard much about Kenneth Spence but little about B. F. Skinner. It was when completing an MA degree in Speech at the University of Northern Iowa that he took a course in the Psychology of Speech. Verbal Behavior was the textbook. Knapp's MA thesis was "Privacy and Communication: B. F. Skinner's Analysis of Private Events." After completing his doctoral degree at University of Nevada, Reno, Knapp spent a year at West Virginia University and 31 years at the University of Nevada, Las Vegas where he is Emeritus Professor of Psychology.

The first part of this article, covering the early period of Skinner's analysis of verbal behavior (1930-1935) appeared in Issue III, 2017 of Operants.

**Contributions of the authors were in the order given.*

verbal behavior, and that is, the distinction between formal and thematic control. He was attempting, as he mentioned in a letter to Fred Keller, “A statistical study of formal and thematic perseveration.”

Evidently there was a tug in his repertoire in two directions. He still showed a tendency to analyze literature in the traditional psychological manner. At the same time, there were also his alternative efforts to construct a completely new way of analyzing language, however manifested. The tug reflected itself acutely in his attempt to write up his radio lectures and publish them, perhaps as a small book as suggested by Harry Murray. Even though, as he said, not much of the material was original, he worked hard at the effort “and wrote for three or four hours every morning.” He finally gave up. As he said of his manuscript,

But I was tired of it. I had borrowed the psychoanalysis of Lewis Carroll, J. M. Barrie, D. H. Lawrence, and Dostoevski from other writers, and my own work on alliteration and metaphor was concerned with the decoration rather than the content of verbal behavior... Six months later I would be writing, “I’m almost ready to undertake a five-year plan and convert the whole thing into a complete treatise on Verbal Behavior, instead of literary manifestations only.

Skinner was close to abandoning completely the traditional psychological approach to literature. As he said, “I was obviously moving toward a book on verbal behavior as a whole. The psychology of literature was not the field I had embarked upon as a Junior Fellow ...” That is, it was not the sort of analysis which he had started when challenged by Whitehead. He continued the teaching of a language course into the regular spring semester of 1941. But its description now differed considerably from the earlier one. This one covered, as Skinner stated, “the nature and forms of verbal behavior; motivational and emotional influences in the emission of speech ...” He was now moving the analysis into *his* theoretical framework.

It soon showed itself explicitly. He analyzed the process involved in the repeated guessing of alternatives. In his article on “repeated guessing”, he objects indirectly to structuralism. He later phrases his objection explicitly, “Behavior is discovered to have certain organizing principles which are then used to explain that behavior.” What is interesting about the “guessing” article is the alternative explanation advanced by Skinner to the structuralist one. People were guessing patterns of coin tosses. For Skinner, “guessing was simply a kind of verbal behavior distinguished by the fact that responses were not under the control of identifiable discriminative stimuli.” Skinner then posits a type of contingency control over the guessing behavior. Instead of the reasons for the actions being embedded in the form of the actions themselves, it is the controls over the actions that give rise to the forms observed. And Skinner, for the first time in the reference section of a published paper in 1942, lists his unpublished manuscript on *Verbal Behavior*.

The curve of Skinner’s professional career was then

deflected. The United States entered World War II in December of 1941. Skinner threw himself into the war effort. *Project Pigeon*, a project to design missiles guided to their targets by pigeons, consumed his time from the Fall of 1942 to the Spring of 1944. It was, however, to his disappointment, discontinued. (At the time, radar was in development, but classified top-secret. Skinner was not informed of the reason for discontinuing *Project Pigeon*.) Nevertheless, the project demonstrated successful engineering applications of complex behavioral enterprises derived from his basic science formulations. Almost half a century later, that demonstration was echoed in the evidence-based teaching of language based on his formulation of verbal behavior. With both the immediate and the later engineering effects, he was fulfilling the stated aims of two of his scientist mentors, Bacon and Mach—the proof of a valid and viable science was its useful outcomes.

As *Project Pigeon* wound down, in the summer of 1944 Skinner states that he “was granted a sabbatical furlough to complete a manuscript on Verbal Behavior.” The new name of the work implies a much stronger commitment to his framework of analysis rather than to that of the traditional linguistic or psychological formulation. It is as if the central focus now emerged clearly into view for him. Soon he is teaching, not courses in the “psychology of language” but courses on “verbal behavior”, which he did in 1946 at Indiana University. We get snippets of what he was doing from third parties. In a letter from R. M. Elliot to E. G. Boring, Elliot writes,

Skinner went to work on his postponed Guggenheim project, the book on language, now announced to be two volumes in length. He made no effort to go elsewhere to finish the work, saying that he could just as well work it out in his own house and avoid the wartime congestion which he would find around the larger libraries of the country.

This apparently refers back to the year Skinner set up a writing desk in the basement of his Minnesota home. While Skinner was at Indiana (1945 to 1948), Fred Keller invited Skinner to give a summer course at Columbia University on verbal behavior. It was an important moment in Skinner’s attempt to achieve a coherent statement of his theoretical position on verbal behavior. It provided an opportunity to present an overview of his language analysis to a sympathetic yet knowledgeable audience; an audience that would provide him feedback and give him an opportunity to check on the firmness of the new foundations of the lingual relations he was investigating. It was the first complete public statement of his position. (The Columbia University Department of Psychology chairman wished to call the course “The Psychology of Semantics” and Skinner changed it to “Psychological Interpretation of Verbal Behavior”.) The material in Skinner’s course “was taken from my courses on the Psychology of Language and the Psychology of Literature, as well as from the William James Lectures in preparation.” Skinner lectured from his prepared material, but did not provide written handouts. However, a young graduate

student, Ralph Hefferline, managed to reproduce almost in toto what was said. Hefferline had developed a form of speedwriting that captured quite accurately the class lecture. From the *Hefferline Notes* (hereinafter referred to as the *Notes*) we get a look at Skinner's thinking on verbal behavior at the time, and as important, the changes that occurred between this first public presentation and the publication ten years later of *Verbal Behavior*. Across this gap, the *Notes* provide a bridge.

The Hefferline Notes

As pointed out, the *Notes* (1947) were based on a 5-week course, Psychology s247 Psychological Interpretation of Verbal Behavior, given by Skinner at Columbia University beginning in July of 1947. In the Columbia University summer bulletin he described the course as "an analysis of basic processes in the behavior of the speaker and hearer. Logical, linguistic, and literary contributions are considered ..." Ralph Hefferline later played an important role in the development of gestalt therapy and biofeedback technology, but he also made substantial contributions to the experimental analysis of behavior. As Skinner explained in his personal correspondence, "Ralph attended my lectures I gave on verbal behavior at Columbia in 1947 and since he was a very rapid stenographer he made a complete stenographic record. He then digested the material and published a long summary of my course."

Skinner said that the *Notes* "covered much more ground than my William James Lectures." Such an observation must be reconciled with the disparity in length. The *William James Lectures* are 176 single-spaced pages compared to the *Notes* of only 76 similarly spaced pages. "Detailed" in this context must mean something like level of discussion, or number of examples per page. The *Notes* do not contain summaries of the literature in any ordinary sense of that expression. There are no systematic citations or references. But there is a great density of examples and illustrations of verbal responses spread among 30 divisions of the 606 sequentially numbered unequal sections. These vary in length from a single sentence to paragraphs of several dozen sentences.

The *Notes* open with a dismissal of the traditional manner of handling words and of their dualistic meaning, and calls instead for a "naturalistic approach" in which "variables of which verbal behavior is a function" are analyzed in terms of "the conditions which lead to the emission of verbal behavior." Skinner then introduces the now established categories of verbal relations such as *mand*, *tact*, and *intraverbal*. Thus, what one finds in the *Notes* is later directly reflected in the book *Verbal Behavior*. But there are a few differences in content between the brief *Notes* and the later volume. These warrant comment. Some concepts in the *Notes* are later renamed, some are taken up in other works by Skinner, and some appeared to be dropped completely. For example, in the *Notes* one large section is titled "Secondary Verbal Behavior" and it deals in part with what becomes the autoclitic in *Verbal Behavior*. Another large section discusses "Control of the Individual by Self and Society"; here Skinner previews the self-control techniques elaborated in *Science and*

Human Behavior.

The topics dropped or changed may be the most interesting. In the *Notes*, Skinner used the expression *hearer* rather than the later *listener*. He explained the change in the *Shaping of a Behaviorist*: "In my early notes and in my course at Columbia I used 'hearer' instead of 'listener.' Russell used it in his review of *The Meaning of Meaning* in the *Dial*. It is a more comprehensive term . . . but it is hard to pronounce and 'listener' was taking over." The concept of *contract* is introduced in the *Notes* to cover circumstances in which "there is a condition which requires behavior We can call these contracts." The contract says something about the behavior desired, but does not give us the behavior. For example, "we simply want to be a writer but haven't anything to say, or again we want to fill an awkward silence. There is no cue given as to what should be said—simply the pressure for speech at any price." A large section of the *Notes* is devoted to "Individual Differences in Verbal Behavior." This topic is completely dropped in *Verbal Behavior*. Nor does it appear in the *William James Lectures*. In fact, few discussions of individual differences occur anywhere in the corpus of Skinner's works, and for an obvious reason: The concept of individual difference arises only when an organism is compared to other organisms on a characteristic or trait as measured by some metric. Intelligence Quotient is a classic example in the history of psychological practice. But individual differences do not arise in the experimental analysis of behavior since the on-going behavior of the individual organism is compared to its own *behavioral* baseline at an earlier or later time. (Skinner's theory of behavior examines properties of behavior, not individuals.) When Skinner refers to the speaker and listener in *Verbal Behavior* he is referring to the actions of an individual organism in relation to controlling contingencies of reinforcement, punishment, discrimination, or induction, not in relation to trait qualities of other speakers or listeners. In a large section of *Notes*, Skinner explains, "we could mention hundreds of differences among people with respect to verbal behavior, for which tests could be designed if wanted." But he has just dismissed in the previous section a correlation analysis of verbal behavior—advocating, instead, his "functional analysis." This distinction may have been at high strength in Skinner's then current repertoire as one of his former students, John Carroll, had come under the influence of factor analysis, and hence, its analysis of behavior by multiple correlations of various tests that could be administered to individual speakers. Though through an amanuensis, the *Notes* (1947) provides the first written account of Skinner's functional analysis of verbal behavior.

The *Notes* were soon superseded by the *William James Lectures*. When a secondary account of Skinner's analysis was published in an early textbook of the science of behavior (Keller & Schoenfeld, 1950), it was the *William James Lectures* that formed the foundation. In the early 1950s, Skinner would cite the availability of both the *Notes* and *Lectures* and the pressing need for a Natural Science 114 (his undergraduate course at Harvard) textbook as the reasons for postponing a final draft of *Verbal Behavior*. Today the value of the *Notes* resides in its record of Skinner's analysis as that analysis made the transition from spoken form to its written

representation as *Verbal Behavior* 10 years later in 1957. Figure 3 provides an overview of the work of his Middle Period.

Final Work: Late 1940s to 1950s

In a letter to Fred Keller in the spring of 1947, Skinner writes, "You may have seen an announcement of my assignment as William James lecturer at Harvard next fall. I have turned my laboratory over to my research assistants and an [sic] spending a number of hours each day at my desk working on what I'm sure this time will be the final draft of Verbal Behavior. Boring has made a complete about-face and is fantastically chummy in all his letters."

Boring and Skinner had a tense relationship when he was a graduate student and Boring was the department chair in the Department of Psychology. Skinner was a fervent advocate of behaviorism and Boring an ardent defender of structuralism. But that was all now in the past. To Boring's credit, he recognized Skinner's contribution to behavioral science. He took the lead in bringing Skinner back to Harvard as a faculty member and in arranging his appointment as the William James lecturer. It was Skinner's grand opportunity to present his verbal behavior theory to one of the most important intellectual and academic communities in the country. He made the most of it, and made it the right set of circumstances to finish his book on *Verbal Behavior*.

The *William James Lectures* gave Skinner the opportunity and the incentive to once again plunge fully into the topic. As he later wrote in his autobiography, *Shaping of a Behaviorist*, "Obviously my topic would be verbal behavior. Except for one seminar I had done no further work on it since coming to Bloomington." The seminar to which he refers was the one he gave the prior summer at Columbia University. (Bloomington referred to his appointment to the Department of Psychology where he was now chairman.) "I could plead the exigencies of a chairmanship, but I had undoubtedly digressed."

In *Shaping of a Behaviorist*, Skinner describes the situation well:

Week by week I wrote my lectures, and Kitty Miller typed them. I delivered them on successive Friday afternoons. On the first day my audience was fairly large, and then it settled down to the size characteristic of a lecture series. Ivor Richards

... not only came but read my lectures as I produced them. Bridgeman came and often had something to say afterward. . . . Edna Heidbreder came in from Wellesley and sent a good report to Mike Elliot. More than a dozen years after Whitehead's challenge, I was presumably finishing a manuscript on verbal behavior, but I was taking it from a much larger version, and I wrote my lectures knowing that they would probably not be published as such. Nevertheless, they covered the main themes. When people spoke, wrote, or gestured, they were not expressing ideas or meanings or communicating information; they were behaving

in ways determined by certain contingencies of reinforcement maintained by a verbal community. The contingencies had properties which were responsible for the special character of verbal behavior.

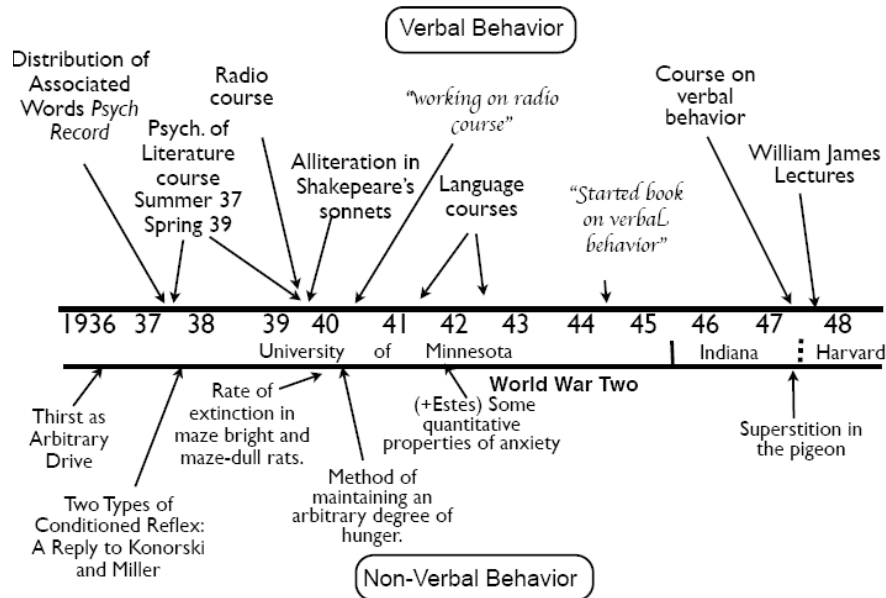


Figure 3 - Middle Period: 1936 - 1948

In the fall of 1947, he again writes to Fred Keller, "The lectures are going fine. Garry is delighted.

My audience has held up better than other WJ lecturers, and a few people (IARichards for xample [sic]) are highly enthusiastic.

I'm writing 10,000 words per week - and going to bed at 830 to keep it up. But I've caught my second wind, and barring sickness, will finish on schedule. Another couple of months will be needed to get the Ms into shape."

Ten years would pass before he did get "the Ms into shape."

Boring was "delighted" (he pushed for Skinner's appointment at Harvard), but was factual about the lectures and their impact, and what may be done with them.

"The first Lecture was fair but not too well planned, since the first part sounded as if it were read (it was) and

the last was too hurried to be gotten in. But Fred is bright enough to learn, and he cut out twenty per cent of the second Lecture. Read slowly, and had his audience fully with him. There was very little loss from the first day to the second--perhaps 220 the first time and 210 the second. I. A. Richards came and George Parker, but mostly the unknown crew which goes to lectures in Cambridge. . . .

He is getting them typed and shaped for publication as he goes along, we have already talked to the Harvard Press which wants them. The scheme is to make a book of the ten Lectures which will run to about 80,000 words plus 20,000 words more of fine print inserted as running appendices."

Apparently the delay was not due to a lack of opportunity to publish. Earlier there had been an interest by Appleton-Century-Crofts to publish a book by Skinner on verbal behavior. As Skinner describes it, "Elliott wrote that Dana Ferrin would be happy to be released from an implied agreement to publish a book that would have such a small readership." Now Harvard University pursued the opportunity. The title page of an original manuscript for the book on verbal behavior reads,

VERBAL BEHAVIOR

by

B. F. Skinner

William James Lectures Harvard University 1948

To be published by Harvard University Press.

Reproduced by permission of B. F. Skinner

Currently, it is not known why this publication arrangement fell through. What is known is that the Table of Contents for the 1948 version of *Verbal Behavior* differs considerably from that of the final 1957 version. The 1948 Table of Contents reads as follows:

Table of Contents:

Verbal Behavior - The Age of Words
Verbal Behavior as a Scientific Subject Matter
Types of Verbal Behavior
Words and Things - The Problem of Reference
Multiple Sources of Verbal Strength
Making Sentences
The Effect Upon the Listener
Understanding, Real and Spurious
Thinking in Words
The Place of Verbal Behavior in Human Affairs

This 1948 Table of Contents differs considerably from the Table of Contents of the version published in *Verbal Behavior* in 1957. It was not only the labeling of the chapters that differed, so did a good deal of the contents. For example, the 1948 version starts:

CHAPTER I: Verbal Behavior - The Age of Words

We call this the Atomic Age, and for good reason; but it is possible that we shall be remembered for our concern with the expansive rather than the exceeding small - for having aspired toward the heights rather than the depths - and that we are living in the Age of Words. Nothing is more characteristic of our times than the examination of linguistic processes. It is true, we cannot claim to have discovered wither the potency or the perfidy of words, but we are perhaps the first to accept the consequences. Not only have we recognized the importance of language in human affairs; in some measure we have acted accordingly. This is true of every important field of human thought.

Whether it is to be atom or word, the physical sciences have played the leading role. If the scientific materialism of the nineteenth century failed, it was not because any particular philosophy of nature was proved wrong, but because a question arose whether man could fully understand nature in terms of any philosophy whatsoever. The exigencies of scientific practice forced this issue into the open as a question of the validity of statements. Certain key words - among them, of course, the classical examples of "space" and "time" - had to be examined. This was the first sustained attack upon the problem of reference in the modern spirit. It is curious that it should have been made in the field which must have seemed least involved in linguistic difficulties.

But the very first sentence in the very first page in the 1957 published version of *Verbal Behavior* heralds a much different approach, "Men act upon the world, and change it, and are changed in turn by the consequences of their actions." In a first chapter now titled "A Functional Analysis of Verbal Behavior", the first sentence announces Skinner's own confidence in his theoretical position. It points directly to an analysis that focuses on contingencies of selection and that starts with the experimentally derived unit of the operant.

The spring of 1955 finds Skinner at Putney, Vermont, a small village in one of the smaller states of the United States in its northeastern corner. In the prior eight years, he had evidently been extensively revising his prior analysis

of verbal behavior. A letter from D. H. Ferrin—an editor at Appleton-Century-Crofts publishing house—to R. M. Elliot, dated April 5, 1948, gives the smallest of stray glimpses into his activity on verbal behavior, “Last Friday Whitefield saw Keller and Schoenfeld and the latter told him that Skinner left with him for reading what Whitefield gathered was at least the first draft of his talked-of book on Verbal Behavior. If this is true I am rather surprised since I have not realized that Skinner was so actively at work on this project.” It seems likely that what Skinner left was a copy of the *William James Lectures*. We have discovered no documentation of his efforts during these eight years beyond some hastily scribbled notes written in his personal notebook in August 1952 simply laying out plans to rework his verbal behavior book.

These same notes are apparently reviewed in May 1953 and April 1954 where scrawls indicate a sort of inspection on progress. He took a sabbatical from Harvard that year in order to finish his manuscript on verbal behavior. In his personal notebook he writes on “5/13/55” in a page he titled “Stock-taking”: Writing.

Verbal Behavior nearly finished. Change ch’s 2 & 3, add 21 and 22 and last 3, omit epilogues, reduce Appendices & section in one chapter et voila!

The note is almost cryptic since it is written for himself. But the last two terms imply a sort of happy relief combined with a sense of exhilaration at having succeeded at an extraordinary challenge.

Conclusion

We place Figure 4, the overview of the final ten years before publication of *Verbal Behavior*, in the conclusion to emphasize once again the intertwining of Skinner’s work on verbal behavior with that work on behavior that was nonmediated. As pointed out earlier, the same year (1957) he finished *Verbal Behavior*, he also finished his and Ferster’s monumental work on contingency schedules (*Schedules of Reinforcement*). Skinner engaged in and published other experimental work. Furthermore, within his theoretical framework

he considered a number of cultural and professional issues, for example, “Freedom and the control of men” and “Critique of psychoanalytic concepts.” From within his theory of behavior, he further extended its engineering applications started during World War II into the area of animal training, and into the social institution of education. The first, animal training, exploded in an extraordinary way into every arena of animal care and training, from zoo husbandry to commercial enterprises. The second, the extension to education, specifically started as programmed instruction. But its principles and features have now become part of all mainstream education so that those programmed instruction origins are no longer even recognized. Programmed instruction directly derived from Skinner’s analysis of verbal behavior, as does

most of the effective language training with autistic children. The summary above makes clear and drives home the point, once again, that Skinner’s analysis of mediated behavior—verbal behavior whose forms are shaped under particular controls by a cultural community—operated within the theoretical framework of his theory

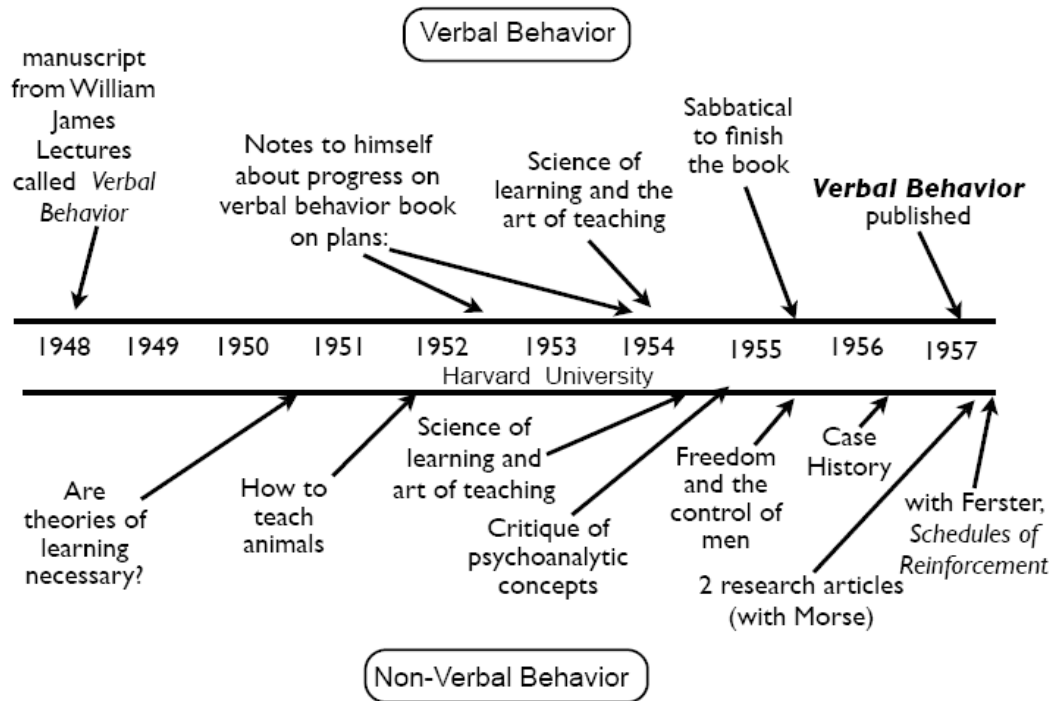


Figure 4 - 1948 to the Publication of *Verbal Behavior* in 1957

of behavior; a theory that also encompassed his work with nonmediated behavior. Both operated under the same principles. Skinner himself makes this point not once but twice in the ending pages on his book on verbal behavior:

There is nothing exclusively or essentially verbal in the material analyzed in this book. It is all part of a broader field.

Originally it appeared that an entirely separate formulation would be required, but, as time went on, and as concurrent work in the field of general behavior proved more successful, it was possible to approach a common formulation.

The history of Skinner’s work on verbal behavior is the history of all his work within the framework of his theory of behavior.

Skinner's Book *Verbal Behavior*: It is Certainly About Time

Mark L. Sundberg¹, PhD, BCBA-D

Between 1985 and 1990, B. F. Skinner and I corresponded on issues related to verbal behavior and the newly established journal, *The Analysis of Verbal Behavior* (TAVB). I was the editor of TAVB at that time. In the second of twelve letters I received from Skinner (dated August 11, 1986), he closed with, "I am pleased with the rapid growth of interest in verbal behavior. It is certainly about time" (Figure 1). In honor of the 60th anniversary of the publication of Skinner's book *Verbal Behavior*, I would like to offer some thoughts on perhaps why, in 1986, Skinner said, "It is certainly about time."

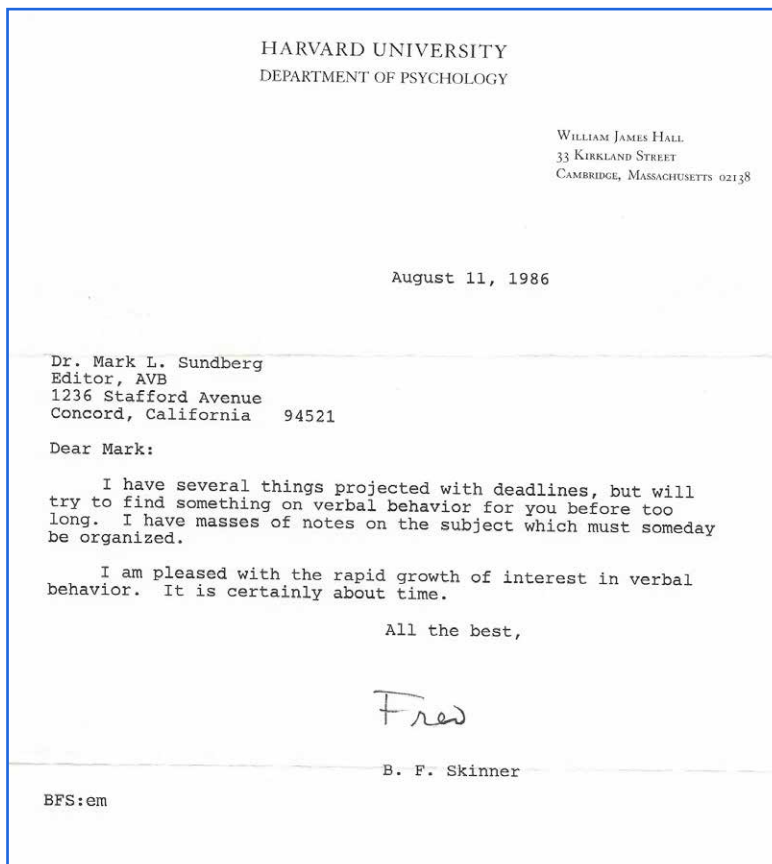
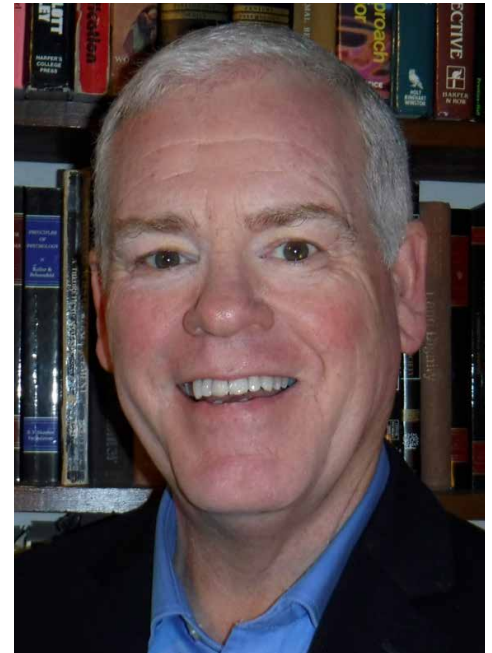


Figure 1

As early as 1945, Skinner proposed that an analysis of verbal behavior was essential for a complete account of complex human behavior. *Verbal Behavior*, published in 1957, contained the details of that account. However, the book's initial impact on the fields of behavior analysis and linguistics was minimal. There were several variables responsible for the slow appreciation

¹I thank Cindy A. Sundberg for her contributions to this paper, and to the history presented.



Mark Sundberg, PhD, BCBA-D received his doctorate degree in Applied Behavior Analysis from Western Michigan University (1980), under the direction of Dr. Jack Michael. He is the author of the VB-MAPP, and co-author of the original ABLLS and the book *Teaching Language to Children with Autism or Other Developmental Disabilities*. He has published over 50 professional papers and 6 book chapters. He is the founder and past editor of *The Analysis of Verbal Behavior*, a twice past-president of *The Northern California Association for Behavior Analysis*, a past-chair of the Publication Board of ABAI, and has served on the Board of Directors of the B. F. Skinner Foundation. Dr. Sundberg has given hundreds of conference presentations and workshops nationally and internationally, and taught 80 college and university courses on behavior analysis, verbal behavior, sign language, and child development. He is a licensed psychologist with over 40 years of experience. His awards include the 2001 "Distinguished Psychology Department Alumnus Award" from Western Michigan University, and the 2013 "Jack Michael Outstanding Contributions in Verbal Behavior Award" from ABAI's Verbal Behavior Special Interest Group.

of Verbal Behavior among behavior analysts. For example, during the 1950s and 1960s our field was primarily focused on the experimental analysis of behavior, and only a small number of behaviorists were working in applied areas, and even fewer studying human language. Those who were early pioneers of the experimental analysis of language faced many challenges, such as the absence of an existing research methodology for studying language as behavior.

The field of linguistics demonstrated little interest in Skinner's analysis of language, or his behavioral views in general. This was partly due to Chomsky's negative review of *Verbal Behavior*, but also, as Skinner explained in a 1973 festschrift for his friend, I. A. Richards, "*Verbal Behavior...has not been understood by linguists or psycholinguists in part because it requires a technical understanding of an operant analysis, but in part because linguists and psycholinguists are primarily concerned with the listener—with what words mean to those who hear them, and with what kind of sentences are judged grammatical or ungrammatical.*"

Given the slow appreciation of *Verbal Behavior* by behavior analysts and rejection by linguists, in 1978, Skinner cautiously wrote, "*Verbal Behavior...will, I believe, prove to be my most important work.*" His words "will, I believe, prove to be" could be classified as descriptive autoclitic tacts of weakness regarding the source of control for his primary response "my most important work." Skinner seems to be implying that after two decades his book had not achieved the impact he thought it should have, but he was not giving up hope. Eight years later, in his 1986 letter, Skinner referred to the "rapid growth of interest in verbal behavior" and exclaimed, "It is certainly about time." Why was Skinner now so optimistic about verbal behavior? I suggest it was due to a confluence of events and activities that occurred in our field from the mid-1970s to the mid-1980s that directly facilitated the development of Skinner's analysis of verbal behavior. Several of these events and activities will be briefly described.

Jack Michael and his Verbal Behavior Courses

Jack Michael taught his first course in behavior analysis in 1955 at the University of Kansas. He used Skinner's *Science and Human Behavior* as the textbook for that course. In that book, Skinner mentions his upcoming book *Verbal Behavior* in a footnote. Jack contacted Skinner regarding the book, and Skinner sent him early versions of the material (the Hefferline class notes and the William James Lectures). Jack began to incorporate Skinner's verbal behavior content into his behavior analysis course. After the book was published, he developed a full course in verbal behavior, and while at Western Michigan University (WMU) he offered that course almost every year between 1967 and his retirement in 2003 (see Esch & Esch in this issue of *Operants*). Jack was the consummate teacher of verbal behavior. He was able to impart to students the verbal repertoires necessary to use the concepts and principles of behavior analysis to analyze verbal behavior in any context. In the process of teaching others, Jack was constantly

working on furthering his own understanding of Skinner's analysis of verbal behavior and refining various aspects along the way (e.g., establishing operations, codic and duplic relations, automatic reinforcement). In addition, Jack was able to impress upon his colleagues the importance of Skinner's analysis of verbal behavior to the field of behavior analysis.

The Midwestern Association for Behavior Analysis (MABA) and later, the Association for Behavior Analysis (ABA)

In 1974 MABA was established. This was an important development for the field of behavior analysis. Not only did MABA give an organizational structure to our field, but it offered contingencies to conduct and present behavioral research, and opportunities to meet and learn from our field's greatest contributors. MABA grew rapidly, and in 1978 the executive council dropped the "Midwestern" aspect of its name, and changed it to "ABA."

As evidence of the low interest in verbal behavior during that time, the 1st MABA convention offered hundreds of presentations, but a review of the program book turned up only one event related to Skinner's analysis of verbal behavior. It was a symposium chaired by Joe Pear titled "Skinner's book *Verbal Behavior*: Some Twenty-five years later." But, over the next three years the number of verbal behavior presentations grew steadily, and by the 4th annual MABA convention in 1978, the programs had offered verbal behavior presentations by some of the field's most prominent behavior analysts including Charlie Catania, Don Cook, Willard Day, Sigrid Glenn, Terry Knapp, Jim Holland, Jack Michael, Joe Pear, Kurt Salzinger, Roger Schnaitter, Eve Segal, B. F. Skinner, Joe Spradlin, Ernie Vargas, Julie Vargas, and Scott Wood. In addition, the MABA programs began to offer an increasing number of experimental and applied papers and posters on verbal behavior.

The Application of Skinner's Analysis of Verbal Behavior

In 1963, Joe Spradlin provided the first systematic application of Skinner's analysis of verbal behavior. Spradlin developed a language assessment tool for low-verbal institutionalized persons based on the verbal operants (the Parsons Language Sample). He was also instrumental in the early development of language intervention programs based on verbal behavior. Other applications gradually followed but progress was slow. Even MacCorquodale's solid rebuttal of Chomsky's review did not seem to spark an interest. By the mid 1970s, published research on verbal behavior applications was still rare.

In 1976, Jack Michael started offering a graduate course at WMU titled Verbal Behavior Applications. In that course Jack focused on how to use Skinner's analysis of verbal behavior to analyze and treat a variety of verbal issues and problems (e.g., autism, intellectual disabilities, aphasia, dementia, literacy). At that time, Jack was also a research advisor at the Kalamazoo Valley Multihandicap Center (KVMC), a WMU psychology department practicum

site. Jack's main focus at KVMC was on verbal behavior research. Many of the staff members (especially Jack's graduate students) were eager to explore the experimental and applied potential of Skinner's analysis of verbal behavior. With Jack's direction, his students developed language assessment and intervention programs based on the verbal operants, and a thematic line of empirical research on the elementary verbal operants was established.

Over the years Jack produced hundreds of students who not only had obtained degrees in behavior analysis, but also received training in Skinner's analysis of verbal behavior and its applications. Several of Jack's students, as well as other behavior analysts, began to offer verbal behavior courses at universities across the country, and provide verbal behavior workshops at conferences and other events. This led to an increase in the use of verbal behavior procedures in schools, state hospitals, clinics, and in-home programs (e.g., mand training, pairing, tact to intraverbal transfer procedures). Verbal behavior research also began to appear in the behavioral literature.

The Verbal Behavior Special Interest Group (VBSIG)

In 1977, MABA introduced a convention program category titled "Special Interest Group (SIG)." The first VBSIG meeting (1977) was chaired by W. Scott Wood and Jack Michael. The room was full, and many people spoke, including Skinner. A number of issues were raised such as the difficulty of teaching from *Verbal Behavior* (Skinner supported that point) and the prerequisite repertoires required for understanding the book. The consensus of the group was that every effort should be made to improve the instructional technology, foster the exchange of materials, and promote research in the verbal behavior area. Following that meeting, several actions were taken by the VBSIG members, including developing a method to better disseminate verbal behavior material, and

encouraging and supporting verbal behavior research.

Outlets for Dissemination and The Analysis of Verbal Behavior (TAVB)

Following the 1977 VBSIG meeting, we progressed through different outlets for disseminating verbal behavior content. Among our efforts was the creation of the Western Michigan University Behavioral Monograph Series. This series was started and maintained by a group of WMU students (Patty Cherpas, Stephen Fath, Mitch Picker, and Mark Sundberg) and supervised by WMU faculty members David Lyon (the department chair), Jack Michael, Kay Malott, and Alan Poling. Sixteen monographs were

published, among them were Ralph Hefferline's notes from Skinner's 1947 verbal behavior course, Skinner's William James Lectures, Marge (Vaughan) Peterson's early work on automatic reinforcement, and our material on the application of verbal behavior to language assessment and intervention for children with language delays. The printing and mailing of the monographs were initially funded by KVMC (thanks to Jerry Shook), and made available to those who were interested. Another method of disseminating information on verbal behavior, beginning in 1982, was the VBSIG's newsletter,

the VB-NEWS. This newsletter served the verbal behavior community by presenting short verbal behavior articles, conference information, resources, and other standard newsletter content. We began to get submissions that were lengthy, and important contributions to the analysis of verbal behavior. The decision was made by the members of the VBSIG to transition the VB-NEWS into a journal format, including establishing a Board of Editors and a formal peer-review process. In 1985, the name and format of our newsletter was changed from VB-NEWS to *The Analysis of Verbal Behavior*, and a new behavioral journal was

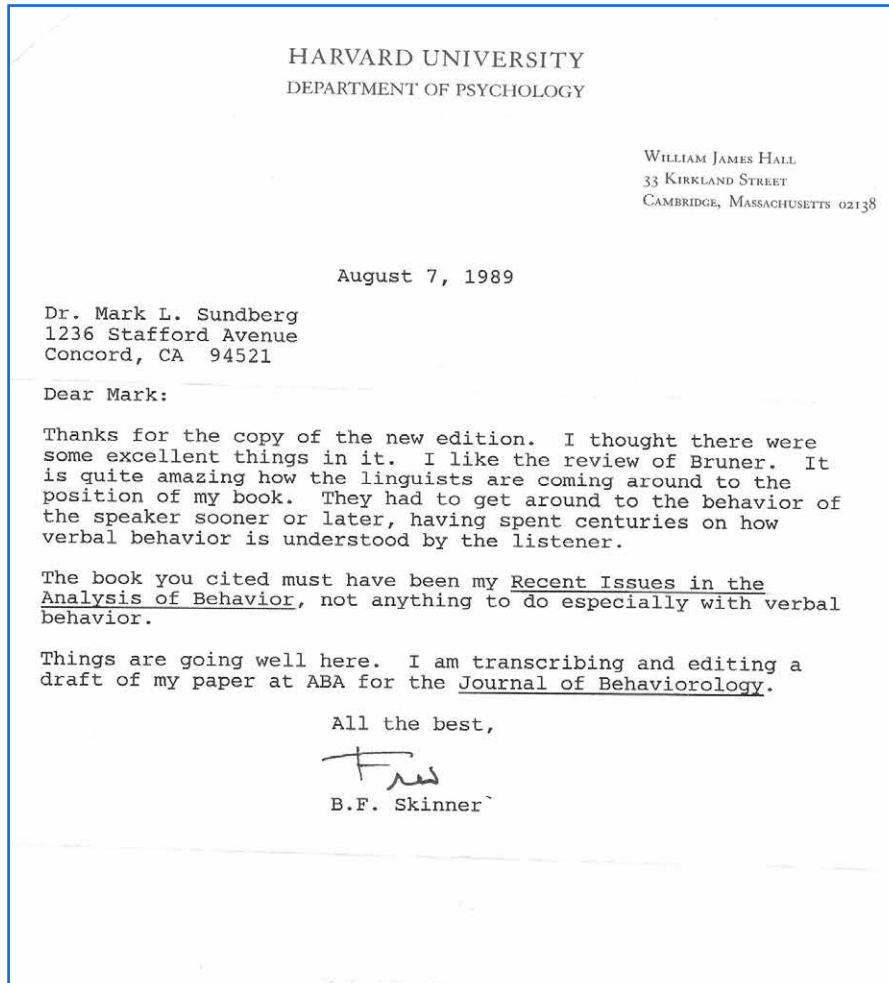


Figure 2

launched.

Skinner's Influence on Linguistics

Skinner hoped that linguists would eventually understand his analysis and agree with him. In many respects, it was the shortcomings of linguistic theory that were the primary target of his book, shortcomings he sought to amend. I received my tenth letter from Skinner (dated August 7, 1989) after sending him Volume 7 of TAVB. In that letter (Figure 2), Skinner commented on a review by Terry Knapp of Jerome Bruner's book *Child Talk* that had appeared in an earlier issue of TAVB. I'm guessing Skinner had just read it when he wrote, "I like the review of Bruner.

It is quite amazing how the linguists are coming around to the position of my book. They had to get around to the behavior of the speaker sooner or later, having spent centuries on how verbal behavior is understood by the listener." It had to have been satisfying for Skinner to see such enlightenment from a well-respected linguist.

In the Spring of 1990, Skinner was excited about a paper soon to be published by a well-known historian of linguistics, Julie Tetel Andresen, titled "Skinner and Chomsky thirty years later." From a historian's perspective, Andresen reevaluated the debate between Skinner and Chomsky and sided with Skinner. She also recommended changes in the historical record, and noted, "writing Skinner into the record changes the history of what we think our discipline to be and thereby reconfigures the disciplinary boundaries." Skinner sent me two letters about Andresen's work, as well as a draft copy of her paper. Andresen then wrote me, noting Skinner had asked her to do so, and provided me with the publication information. The paper was going to be published in the journal *Historiographia Linguistica*, but Skinner felt her findings also needed to reach the behavioral community. In the twelfth letter I received from Skinner (dated April 24, 1990), he suggested, "some good operant


person (should) review the article by Andresen for your journal. I think it would be wonderful for more people in the field of verbal behavior to know about it" (Figure 3). Terry Knapp was on it, and we published his review of Andresen's work that year in Volume 8 of TAVB. In addition, shortly after publishing her first paper on Skinner and Chomsky, Andresen published a similar paper in *The Behavior Analyst*.

Post Skinner

Skinner died August 18, 1990. Now, 60 years after the publication of *Verbal Behavior*, verbal behavior research is thriving and his book is selling at an all-time high. TAVB is entering its 34th volume, and its archives

contain approximately 400 conceptual and empirical papers on verbal behavior. Empirical research on verbal behavior now appears regularly in the major behavioral journals, as well as in journals outside of our field. Applications of verbal behavior have been successful in a number of areas (e.g., autism, dementia, education, second language learning, problem solving, emergent relations), and many speech-language pathologists (SLPs) are now using a verbal behavior approach in their clinical work. Also, some SLP professors are teaching verbal behavior in their courses.

We are just beginning to unpack *Verbal Behavior* and realize its potential. But, we now have a solid body of empirical research, a research methodology, and verbal behavior research labs

operating around the world that regularly produce new findings on verbal behavior, often in great thematic detail. For example, in a recent review of the literature, Aquirre, Valentino, and LeBlanc identified 53 empirical studies on just the intraverbal relation published in the past 10 years. Skinner's analysis of verbal behavior is finally receiving the attention it deserves. It is certainly about time! 

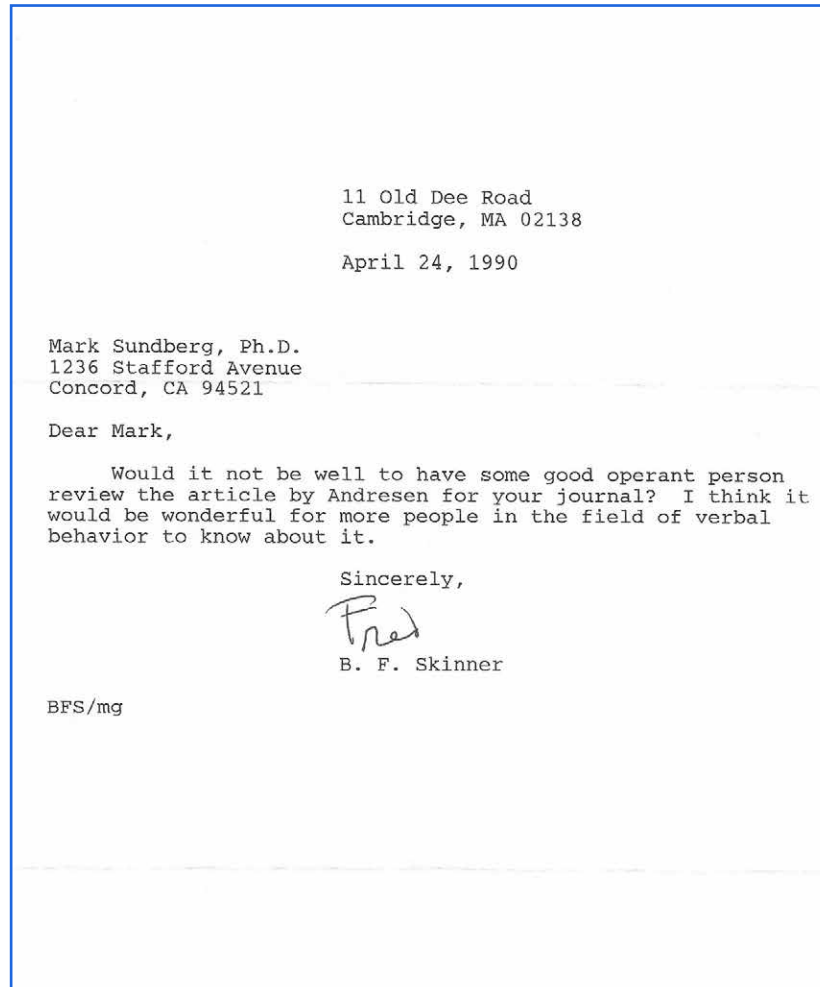


Figure 3

A Brief History of the Teaching of Verbal Behavior at Western Michigan University

Barbara E. Esch, PhD and John W. Esch, PhD
Esch Behavior Consultants, LLC
Kalamazoo, Michigan

In the beginning, there was no class in verbal behavior at Western Michigan University. Enter Jack Michael in 1967, and a VB course begins to take shape, ushering in a nearly 40-year era of influence by Jack, afire with behaviorism and igniting that enthusiasm in WMU psychology students, as he helped them understand and appreciate Skinner's parsimonious and intricate analysis of human language.

For this article, we had the joy of interviewing not only Jack himself but also a number of people who've worked with Jack at WMU, either as co-faculty (Wayne Fuqua, Dick Malott, and Cindy Pietras) or as graduate students who served as his teaching assistants (Norm Peterson, Hank Schlinger, Mark Sundberg, and Randy Williams). You'll notice their (last) names sprinkled throughout the paper – thanks to all!

Verbal Behavior, The Book

BF Skinner published *Verbal Behavior* in 1957, presenting his interpretation of language from a functional (non-linguistic) perspective, an analysis of speaker-listener behavior, according to the four-term contingency. Before it was published, the analysis had been in the works for over 20 years, as Skinner lectured and taught courses on the topic, refining his own verbal behavior about verbal behavior.

Written material for the book grew, at least in part, from notes Skinner had prepared for a series of invited presentations (the William James lecture series; available at bfskinner.org/wp-content/uploads/2014/02/William-James-Lectures.pdf) that he would give at Harvard in the Fall of 1947. His preparatory notes also had formed the basis for a six-week summer course in VB that Skinner presented at Columbia University, just before his Harvard talks. His lectures during the VB course at Columbia were summarized and distributed in written form by Ralph Hefferline, an accomplished stenographer and recent Columbia PhD, who had attended Skinner's summer class. Known as the "Hefferline Notes," but formally titled *A Psychological Analysis of Verbal Behavior*, these important transcriptions have been made available in searchable format through the efforts of the B. F. Skinner Foundation (bfskinner.org/wp-content/.../02/A-Psychological-Analysis-of-Verbal-Behavior.pdf).

Skinner's book didn't have the immediate and widespread positive impact that he might have hoped, but some were indeed beginning to dive into it with relish. By the time *Verbal Behavior* was finally published, Jack Michael had already been teaching (at University of Kansas) from Skinner's *Science and Human Behavior* and he had obtained, read, and re-read the Hefferline notes and was incorporating the material into VB discussions and informal seminars with his students at KU. These VB-focused sessions continued and became more formalized as Jack's teaching career took him to the University of Houston, then to Arizona State University, and finally to Western Michigan University where he taught a VB class every year until he retired in 2003.



Dr. Barbara Esch is a behavior analyst and speech pathologist with over 30 years experience in behavioral interventions for individuals with developmental disabilities. Dr. Esch received her PhD in Applied Behavior Analysis from Western Michigan University. She is the author of the Early Echoic Skills Assessment, part of the Verbal Behavior Milestones Assessment and Placement Program: VB-MAPP (Sundberg, 2008). Her research on behavioral treatments for early speech acquisition appears in The Analysis of Verbal Behavior and the Journal of Applied Behavior Analysis.

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Barbara and John are co-owners of Esch Behavior Consultants, LLC.

Verbal Behavior Teaching at WMU

Course description and level

The WMU university catalogs from Jack's first few years there don't mention a VB class as such, although he almost certainly included VB content in his early courses. It's possible that the class was initially offered as "Social Psychology," thereby satisfying university/accreditation requirements for a broad-based treatment of human communication. The catalogs first mention the topic of verbal behavior in the 1971-72 listing of PSY 260, an undergraduate level course described as: "Behavior Modification II: Normal Behavior: An analysis of complex human behavior with an emphasis on language and verbal behavior." "Verbal behavior" is also listed as a topic in PSY 350 "Stimulus control of Behavior." In the 1974-75 catalog, PSY 260 was now titled "Verbal Behavior," but with the same content description as earlier. By 1980, the course had been moved to the graduate level as PSY 674: "Verbal Behavior: The experimental analysis of language and verbal behavior, with an emphasis upon the analysis of language as present in the writings of Skinner." These changes represent Jack's successful efforts to build a course devoted solely to the study of Skinner's 1957 book.

Initially, VB was a required sophomore-level course and classes were large, 100 to 150 students. The material was more than a little difficult for undergrads, not surprising given its "advanced literary terminology" (Peterson) and "intellectually elite" writing style (Schlinger). There were lots of complaints in the early years, including those from non-Psychology majors and others at the University who thought the course was too narrow in its perspective, a particular concern for those who felt undergraduates should be exposed to a broad spectrum of ideas instead of being funneled into a more singular (i.e., behavioral) perspective. Many students put off taking the class until their senior year.

Since 1980, VB has remained a graduate-level class, where it is offered as an optional course for Master's and PhD credit. Although the course continues to heavily cover Skinner's analysis, its content has expanded from Jack's laser focus on the book *Verbal Behavior* to include an examination of conceptual extensions and critiques of Skinner's analysis, including joint control, naming, and relational frame theory. The course's current professor, Cindy Pietras, identifies future direction for course content that we think is consistent with Jack's priorities: "Because other fields provide mentalistic accounts of complex verbal processes, like audience control, or the conditioning effect of VB, or

how larger classes of verbal operants get strengthened, we need to provide alternative explanations from an operant perspective."

VB course design

Jack structured his VB course as lecture-only. Although he certainly entertained questions from students, he didn't encourage class discussions. He reasoned that students would benefit most if they listened to his explanations of Skinner's material and, thus, learned to talk like him, just as Jack had learned to talk like Skinner. Anything else was pretty much a waste of students' time, because, after all, what could be gained from opinions and speculation among students who were all similarly uninformed?

Jack talked very fast – so rapidly, in fact, that it was impossible to take comprehensive notes. Students quickly learned they'd have to record his lectures and round out their handwritten notes after class. We recall crouching with a cluster of other students at a long table in front of Jack's lectern, our fingers on the "record" button of our respective tape cassettes, and, when Jack gave a nod, everyone would press the red button and scurry back to our seats as he began to talk. About an hour later, all the buttons would click "off" one by one, whereupon Jack would announce "Time for a break!" We'd all quickly flip our tapes over for the second half of class, and then traipse off with him to his office area in Wood Hall where he laid out a spread of snacks for us: bananas, peanut butter and jelly, bread, apples, coffee, and sometimes cider. Many of us still have boxes of these audiotapes, a treasure indeed for anyone wishing to hear Jack lecture again.

Certain components of Jack's VB course were undoubtedly influenced

by his interaction with Fred Keller, who was at WMU from 1968 to 1973. In a 1996 *Behavior Analyst* article, Jack discussed Keller's legacy, including the *Personalized System of Instruction* (PSI), also known as the Keller Plan. Jack's VB course made use of key PSI basics, namely study objectives (SO), weekly exams, and exam retakes.

When we asked Jack why he gave students an exam every week, he said, "So they'd study every week." Weekly exam questions were based directly on information in the SO. Each SO included the objective, sample answers (added in later years), and explanatory points from lecture. So, if you mastered all the SO and lecture material, it was likely that you would do well on the weekly exam. For those who didn't, however, Jack offered retakes on exams, a practice that Keller strongly advocated. But not for the same reasons



Jack Michael

as Jack.

Jack: Fred [Keller] hated the idea that a student would have tried to pass an exam and then failed it, so there was no limit to the number of retakes Fred allowed — students could keep taking an exam until they passed it. Fred thought that, otherwise, students would feel bad about themselves. I told him, “Geez, Fred, these are adults here. The idea of them failing it and feeling bad about it is nonsense...feeling bad isn’t an emotional strain of any sort...it’s simply inconvenient.” This was one area where Fred and I differed. But I liked the idea of offering a couple of retakes. I guess my attitude was I basically knew students didn’t know how to study very well. I wanted them to not fail the class due to poor study skills when they were trying hard...that bothered me...something was wrong with the system. The main reason people didn’t study effectively was because they weren’t properly motivated. So I gave them some motivation in the form of retake opportunities.

Jack also provided students with a weekly grade sheet, showing their cumulative points earned to date. Thus, students had on-going information about their individual trajectory to earn an A, B, or other grade. Randy Williams, who was Jack’s graduate assistant during 1972 and 1973, recalls having at least ten grading assistants himself to help manage the VB course.

Williams: I met with Jack every day. He would alert me to particular questions that might be hard for students and identified what sorts of questions students might have. I would work with my grading assistants every week to make sure they adhered to stringent grading. If they weren’t sure, they should mark it wrong. Students could argue and debate [with Jack] if they got the question wrong...Jack enjoyed that...sometimes he would concede to a student’s argument, overruling me or my grading assistant...Jack’s exams were just phenomenal. Every week he’d come up with a whole new exam. I’d be in charge of trying to organize all the SOs and exams...Jack and I would brainstorm this together to figure out how to collate and disseminate all this material more efficiently.”

These collaborative efforts paid off because the class ran “like clockwork” (Peterson; Williams) and, by 1976, the course, now formally titled Verbal Behavior, “was a well-oiled machine” (Sundberg). Lectures were tight and fluent, primarily concentrating on clarifying key concepts and providing numerous examples.

Williams: Jack was very gentle with his students and he carefully explained problems [that students were having] with logic. He kept everyone involved at different skill levels, from beginner to advanced. He gave multiple examples in the same time it would take other high-quality professors to give only one. He felt

that complex concepts needed to be presented rapidly, for clarity... that you’d miss the gestalt if complex concepts were presented too slowly and deliberately.

Weekly exams ensured that students interacted regularly with course materials, and helped develop strong intraverbal behavior, because all questions were either essay or short-answer (there were no multiple choice items). These sample quiz questions from Jack’s 1983 VB course illustrate the level of knowledge required to excel on his exams:

- Explain Skinner’s statement “Traces of functional extension may survive in an otherwise dead metaphor.” Illustrate this point by writing about “leg of a table.”
- I suggested in lecture two reasons why Skinner does not emphasize the listener. State each carefully, as though explaining this issue to someone who was having trouble understanding his seeming neglect of such an important aspect of language.

One particular exam question cropped up often – it likely came from a highly entertaining study Jack published in 1983 with his students, Paul Whitley and Bruce Hesse. The paper was called “The Pigeon Parlance Project” (PPP). In trying to help students understand how VB relates to basic behavioral principles, Jack often said, “Take it back to the operant chamber. See if you can figure out how to develop an analog verbal operant with a lab animal.” The PPP experimental task was to teach a pigeon 3 types of analog tacts (topography-based, selection-based, and manded stimulus selection). As an exam question, it required describing an analog system for color naming by a pigeon that resembled a typical human color-naming repertoire. It was a tough go for many students

to work through the differences that separately defined these response topographies and their requisite evocative stimuli, but it was a great learning experience and, as Jack would say, “you are all the better for it.” We think he really enjoyed watching students come to the “a-ha” moments where these analyses began to make sense.

VB Applications course

For many years, the WMU Psych Program had a working relationship with the Kalamazoo Valley Multihandicap Center, a local educational site where WMU students could apply their knowledge of verbal (and nonverbal) behavior to actual clients with behavior problems, language deficits, and other impairments. The cooperative interaction between these two programs supported years of research and teaching, and engendered conceptual and experimental



Jack and Keller

publications, as well as a VB Lab, and a VB applications course, which served as a teaching apprenticeship for learning behavioral instructional methods to teach language. Mark Sundberg describes this collaboration in the recent special issue of *The Analysis of Verbal Behavior*, commemorating the 60th anniversary of the publication of *Verbal Behavior*. The VB applications course at WMU continues today (taught by Denise Ross), with students learning to administer behavioral language assessments and to write and carry out behavioral instructional programs.

Jack's students

Learning has always been a two-way street for Jack and he has often remarked on how advantaged he has been by having the opportunity to interact with so many top-notch students. He has publicly acknowledged his students in his writings as well as on his website (e.g., "my intellectual development has been strongly influenced by my interaction with a number of highly effective graduate students...;" jackmichael.org). Verbal behavior, the topic and the book, has been at the heart of many of these interactions.

Norm Peterson, Jack's first WMU PhD graduate, recalls how Skinner's book played a role in Norm's first encounter with Jack. By the early 70's, Norm had already graduated from Grand Valley State University and had completed a 15-hour independent study on Skinner's writings. "I had read the *Psychology Today* article [a 1972 paper that listed The University of Kansas and WMU as leading the field in Skinnerian psychology] and I went to Kalamazoo to see if I wanted to go to Western. I had already read the VB book. I was walking around campus and went over to the Psych Dept. I was just wandering around [Wood Hall] and came to Jack's office. I saw the book [VB] on his desk and I was excited – I asked him 'have you read that book?' And Jack said, 'well yes, I have, have YOU?'" This was the beginning of years of interaction between this professor-student duo that led to Norm publishing, in 1978, his dissertation as a book that has served as a welcome straightforward

introductory text to Skinner's VB.

So many people who've worked with and learned from Jack have gone on to make unique and significant professional contributions of their own in the area of verbal behavior: teaching VB classes, establishing VB research labs, and publishing their own conceptualizations of verbal behavior and related experimental work. Perhaps like Hank Schlinger, other VB teachers have followed Jack's model of tackling small passages of VB with students and offering lots of examples to make Skinner's book understandable and meaningful to them.

Schlinger: *Students find the book almost impossible to read without help. What I try to do when teaching it is to constantly remind students that, no matter its difficulty, the book is really just an extension of the basic unit of behavior analysis—the functional four-term contingency—to behavior Skinner called "verbal."* Of course, once they "get it," students appreciate the power and elegance of the extension of the basic principles derived from the animal laboratory to that most human of behaviors—language. (<https://goo.gl/FDUMMZ>)



Jack and Skinner

In closing

Jack recently remarked that he felt lucky indeed to see how extensively Skinner's analysis of verbal behavior has been promulgated and we think he's pleased to know that he's had a substantive part in making that happen. His goal has always been to make this analysis as meaningful to others as it has been to him. Randy Williams relates an anecdote that highlights how well Skinner himself thought Jack had succeeded in this goal:

Williams: *At the ABA conference, I attended the 90th birthday of Fred Keller, and Skinner made the metaphor of the two Freds riding in tandem on a bike. A couple years later, Skinner attended Jack's 50th (I think) birthday at ABA and, in toasting Jack, [Skinner] said he would have to put a third seat on the bike for Jack. I think that was Jack's all-time favorite compliment.*

The Experimental Analysis of Verbal Behavior Takes Off

Anna Ingeborg Petursdottir
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In 1978, reflecting on his career contributions, B. F. Skinner predicted that *Verbal Behavior* would ultimately prove to be his most important work. It is not hard to see why. Skinner wrote extensively on the application of basic behavior principles to human behavior, but *Verbal Behavior* was special. It was special because it addressed the very essence of what is sometimes said to make us human; namely, language. For Skinner, the uniqueness of this phenomenon among our species was not a product of any special brain structures, special language-learning capacities, or special cognitive processes that had evolved through natural selection among humans alone. Rather, it was a product of culturally transmitted social reinforcement contingencies that operated on each individual member of the species at the ontogenic level, requiring only the operation of basic learning processes common among species. Verbal behavior was simply behavior under the control of environmental antecedents and consequences; a formulation that in theory, made it possible to predict and control this seemingly complex and unpredictable phenomenon. Prediction and control of verbal behavior, which included much of the behavior we refer to as thinking, was in Skinner's view the "ultimate aim" of his analysis, and the implications were profound, both theoretically and practically.

It might be argued, however, that in 1978, Skinner's prediction was strangely optimistic given how *Verbal Behavior* had fared in the two decades that had passed since its publication. It had never gained acceptance in mainstream psychology or linguistics, and following Chomsky's misguided review, introductory psychology textbooks routinely dismissed it as simplistic and incapable of explaining the intricacies of human language. Even within the experimental analysis of behavior, *Verbal Behavior* had not been successful in engendering a substantial program of research aimed at the prediction and control of its subject matter: A review by McPherson, Bonem, Greene and Osborne found that no more than two dozen studies published before 1978 showed evidence of direct influence by *Verbal Behavior*, and only a few more had been added by 1983. It was unclear to them if this was a problem with *Verbal Behavior* itself or with the prevailing research methods and culture in operant laboratories, but in any case, concerns were raised about this state of affairs.

The empirical database related to *Verbal Behavior* grew in the decades that followed, albeit slowly enough that in the early 21st century, the number of relevant publications per year could still be counted on the fingers of one hand. Authors of various literature reviews pointed out that new additions to the literature dealt primarily with the establishment of simple verbal operants in children with autism spectrum disorder (ASD) and other developmental disabilities, while the analysis of complex controlling variables in mature verbal behavior that occupied most of *Verbal Behavior* remained barely touched upon. Perhaps Skinner was wrong and *Verbal Behavior* simply lacked the potential to advance important programs of empirical research. This was certainly the assumption that, understandably, led some behavior analysts to pursue alternative theoretical frameworks for the experimental analysis of language and cognition. Perhaps McPherson and colleagues were right when they glumly concluded that "*Verbal Behavior* has not provided a conception that has led to empirical examination and explanation of verbal behavior. If the past is a predictor of the future there is no reason to suspect that it will eventually do so."

But the past is not always a perfect predictor of the future. In the laboratory, an individual organism's future behavior is predicted quite well by past behavior as long as environmental conditions and contingencies remain



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stable, but when contingencies change, so do many aspects of behavior. Outside of behavior analysis, predominant views of language have changed in the 21st century. Chomsky's theory of universal grammar has been declared dead and many modern theories of language resonate well with the fundamental implications of Skinner's ideas, even if not directly influenced by *Verbal Behavior* in the sense of making use of explanatory processes that Skinner proposed. Within behavior analysis, there has been an ever-growing demand for services for children diagnosed with ASD and in the area of teaching communication skills, curricula inspired by *Verbal Behavior* have gained popularity. Perhaps as a result, the last decade has seen an unprecedented growth in verbal behavior research.

Three years ago, I was invited to give a presentation at the National Autism Conference, organized by the *Pennsylvania Training and Technical Assistance Network*, in which I was asked to present a comprehensive overview of recent verbal behavior research conducted with individuals diagnosed with autism spectrum disorder (ASD). I decided to limit my review to studies published in approximately the last year and a half before my presentation; specifically, in 2014 and the first 6-7 months of 2015. Verbal behavior being somewhat within my area of expertise, I was certainly aware that empirical studies on mands, tacts, intraverbals, and so on were being published at increasing rates in journals such as the *Journal of Applied Behavior Analysis* and *The Analysis of Verbal Behavior*. But when I conducted my literature search, for lack of a more sophisticated expression, I was blown away by the number of studies I located within my narrow review period. There were more of them than I could possibly cover in the three hours that had been allotted to my presentation. In addition to excluding studies that did not include any participants with ASD diagnoses, I excluded studies that dealt exclusively with functional communication training, studies that dealt exclusively with textual behavior, and studies that dealt exclusively with the behavior of the listener. Still, I had to pick and choose, and could not dwell long on any single study.

Although less than a decade had passed since the publication of the two most recent articles that quantitatively assessed the impact of *Verbal Behavior* on empirical research, the outcome of my literature search for the National Autism Conference suggested that an update might be in order. I recruited the assistance of Bailey Devine to analyze the most recent literature, and our update will be published in the most recent issue of *The Analysis of Verbal Behavior*. The data show that beginning in the mid-2000s, there was a sharp increase in empirical activity influenced by *Verbal Behavior*. The rate at which *Verbal Behavior* was cited in empirical articles had grown more than twofold, and the publication rate of empirical studies that made use of Skinner's verbal operant terminology had grown sixfold, from 4.8 articles per year as reported in a 2006 review by Dymond, O'Hora, Whelan, and Donovan, to over 30! As before, the majority of new studies (75%, to be exact) were applied in nature, and most of these were conducted with children diagnosed with ASD or other developmental disorders. But basic research had increased as well. An average of almost 8 articles per year had been published in which the primary goal was to examine controlling variables over verbal behavior (mostly that of typically developing children and adults) rather than to improve some aspects of the participants' verbal behavior,

and the trend was increasing.

In another forthcoming article that will appear in *Behavior Analysis: Research and Practice*, I took a stab at summarizing the topics investigated in the large database of new articles (369, to be exact) that I found to show evidence of direct influence by *Verbal Behavior* and assessing their contributions. Some might find the results discouraging, in that in spite of the proliferation of empirical studies, a great deal of them still focused on the direct or indirect establishment of the elementary verbal operants described in the early chapters of *Verbal Behavior*, whereas few studies tackled the more complex topics of the later parts of the book. And although the increase in basic research was notable, a large proportion of the basic studies in the database was focused on two related themes: Emergent stimulus control over simple verbal responses, and the relationship between verbal behavior and other emergent stimulus relations. Being someone who is guilty of contributing to this state of affairs, I believe these are worthy topics of investigation and quite important to evaluating the feasibility of reinforcement-based accounts of language. Nevertheless, some might argue this research represents more of an indirect than a direct outgrowth of *Verbal Behavior* and perhaps owes as much of its existence to the program of research on stimulus equivalence initiated by Sidman and colleagues.

Personally, however, I found the state of the literature much more encouraging than discouraging. In the applied arena, intervention techniques had been refined and the complexity of intervention targets had grown. If, as Skinner remarked in *Verbal Behavior*, it is "helpful to keep specific engineering tasks in mind" when evaluating the success with which prediction and control is achieved, it is clear that a good deal of progress has been made with at least one type of engineering task. Further, methodological advances were evident in terms of the use of control procedures to isolate the control of specific variables over verbal responses. Overall, researchers were becoming savvier; they were getting better at the empirical application of Skinner's analysis to relatively simple phenomena, which I dared to suggest is a prerequisite to investigating phenomena of greater complexity. And although it is true that there was little evidence of systematic analysis of the multiple causation model that was at the heart of *Verbal Behavior*, such research was not absent. A number of studies had examined the establishment of divergent and convergent control over children's verbal responses and two 2011 studies that appeared in the *Journal of Applied Behavior Analysis* had taken it a step further to demonstrate in-the-moment convergence of control by public and presumed private events. Given the amount of expertise that has undoubtedly accumulated via the conduct of the hundreds new research studies on verbal behavior, I will not be at all surprised to see researchers soon begin to foray deeper into the later chapters of Skinner's book. The experimental analysis of verbal behavior has taken off, it is on an upward trajectory, and will likely go on to mature in years to come. It would be premature to say that *Verbal Behavior* has already proven itself to be Skinner's most important work, as measured by either mainstream acceptance or empirical activity. But it would be equally premature to say that it dead-ended. In spite of a slow start, it still could happen. 

On Skinner's *Notebooks* and *Verbal Behavior*

David Roth, MA

Throughout his life B.F. Skinner masterfully interpreted seemingly mysterious complex behavior by pointing to controlling variables whose dimensions are defined only by their physical properties. In a published compilation of some of his personal notes from the years 1956 to 1972, titled *Notebooks*, Skinner stated that *Verbal Behavior* was his “most serious work in that vein.” This comprehensive collection of notes includes interpretive exercises of complex behavior captured from Skinner’s experiences outside of the laboratory, descriptions of explanatory gaps from the popular fields of cognitive psychology and linguistics, and a host of other topics from art, literature, education, religion, and government in which people everywhere “are overlooking the enormous contribution a behavioral analysis can make” (p. 247). In this essay, I identify some notes that bear on the topic of verbal behavior, with particular attention to those that extend his interpretation or point to topics that deserve further analysis.

Of 683 total notebook entries, 42 provide interpretations and anecdotes about the primary verbal operants classified as *mands*, *tacts*, *intraverbals*, and *echoics*. The secondary verbal operant called the *autoclitic* is discussed in a further 15 passages. *Notebooks* also includes a number of scenarios of complex behavior extracted from Skinner’s own personal experiences for which he clearly saw a need for molecular interpretations. Important verbal examples requiring moment-to-moment analyses include the behavior of the listener and how he or she comes to understand spoken verbal behavior, as well as occasions in which Skinner noticed, in his own repertoire, manifestations of novel permutations of what he referred to as “atoms” of behavior. Other perplexing examples of complex behavior are Skinner’s recollections of past events in which the original controlling stimuli were not present at the time of the recall.

In the first half of *Verbal Behavior*, Skinner established the foundation of his analysis by describing primary verbal operants, which are identified by the characteristic environmental variables and contingencies that select and maintain them. Since environments outside the laboratory are inescapably complex, manifestations of these operants in our everyday environments often require careful investigation in order to thoroughly understand all of the relevant controlling variables. For example, in one of Skinner’s notes titled *Reinforcement of a Mand* (pp. 105-106) he described a scenario on an airplane in which a young girl manded to her brother, “fasten your seatbelt.” A superficial analysis of this circumstance might have led an observer to infer that concern for her brother’s safety, or at least his obedience to the rules of the airplane, was the controlling variable for her mand. However a more thorough look at the prevailing contingencies led Skinner to realize that what was valuable to the girl was the rare opportunity to exact general obedience from her otherwise non-compliant brother. It was the *fasten seatbelt* sign that momentarily set the occasion for her success.

Another fascinating anecdote with respect to a primary verbal operant is the following passage titled *Concealed Intraverbal* (p. 94), which tends to have a surprising effect on the listener who reads the passage out loud:

We'll toss a die 1000 times. I calculate that the odds are one to three for five sixes in a row.
How many people reading that sentence aloud will



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discover that they have been counting—1,2,3,4,5,6?

In this example, the discrimination of the intraverbal chain appears to be blocked by certain contextual and prosodic variables produced by the listener's own responses to the verbal stimuli. This blocking effect, although well understood in the experimental literature, requires further analysis as it pertains to events analyzed within the verbal field.

Skinner's analysis of the simple verbal relations in *Verbal Behavior* moves toward the complex by discussing the autoclitic's role in effectively modifying the listener's responses with respect to the speaker's primary verbal behavior. Skinner categorized five main types of these secondary operants as *descriptive*, *qualifying*, *quantifying*, *relational*, and *manipulative autoclitics*. The analysis of the autoclitic is one of the most important, yet challenging concepts in *Verbal Behavior*, and *Notebooks* reveals that Skinner had quite a bit more to say on the topic. Skinner's notes describe at least three additional types of autoclitics that were not discussed in *Verbal Behavior*. The *Titular Autoclitic* (p. 240) is an author's written verbal response within the title of a book or paper whose function is to effectively modify the reader's behavior with respect to the title's subject and the subsequent text that follows. For example, Skinner pointed out that the term "About" in the title of his 1974 book was designed to distinguish it from Watson's book *Behaviorism*. Skinner described how a speaker may employ the *Supportive Autoclitic* (pp. 165-166) to recruit certain affirmations that are momentarily lacking from a third party in a conversation (e.g. "wouldn't you agree, John?"). Examples of an *Explanatory Autoclitic* (p. 220) "are more detached from what is said than descriptive autoclitics" and they imply "that a remark will be misunderstood unless the explanation is given" (e.g. "I should explain that..."). The significance of an autoclitic's role in the modification of the speaker's primary verbal behavior raises questions about the behavior of the listener, another critical topic about which Skinner had much to say.

There are at least two passages in *Notebooks* in which Skinner referred to his analysis of how a listener comes to understand spoken verbal behavior. In an entry titled *Knowing and Understanding People*, Skinner wrote that "the listener who understands 'says it along with' the speaker... They know how and why their subjects respond because they have become disposed to respond in the same way themselves" (p. 93). The interpretation that the listener behaves as a speaker has been elaborated separately by Palmer and Schlinger and it effectively aids in demystifying baffling instances of novel behavior (what some areas of the field describe as derived relational responding).

A central theme throughout Skinner's behavioral analysis of language was his identification of what he referred to in his book as minimal units of verbal behavior, such as elementary echoic or textual responses, but in his personal writings he appeared to show an eventual preference for the term "atomic" units. These so-called atoms are small units of behavior whose functional independence often emerges without the need for explicit instruction. An important feature of such units is that they can be recombined with other atomic units to produce novel permutations of

complex behavior in the absence of shaping. In *Notebooks*, Skinner pointed out that the functional independence of atomic responses can be identified and analyzed from situations that result in a sort of "misfiring" of these atoms. Nonverbal examples of these can be found in his passages *Atoms* (p. 203) and *Misplaced Atom* (p. 353), but the reader is strongly advised to turn to the entry, *Verbal Atoms*, on page 254 for an extraordinary example of Skinner's unparalleled analytic repertoire in his description of the variables responsible for his own verbal "mistake" after depicting the measurements of a model ship's ribs as "twelve-to-twelve inches" rather than the accurate description "twelve inches center-to-center." Skinner concluded his elegant interpretation with the admission that statistically or experimentally "it would be very hard to prove much of this." However, Skinner's analysis of this particular situation demonstrates the importance and the power of scientific interpretation in a behavioral analysis of phenomena that cannot be experimentally validated within a laboratory setting.

The analysis of atomic units is a critical component to understanding countless examples of complex phenomena, including the behavior of problem solving to recall events that have occurred in one's past. Skinner clearly showed great interest in his own history with respect to this type of problem solving considering that his published notes include 20 meticulous descriptions and interpretations of his own deliberate attempts (e.g. *Search*, p. 24) and adventitious successes (e.g. *Conditions of Recall*, p. 267) in providing the sufficient supplemental stimuli for a strengthened response to eventually be emitted. The examples of recall strategies provided by Skinner reveal a process that is referred to in the behavioral field as *joint control* in which a response that is momentarily strong (yet unemitted) in one's repertoire is evoked by the sudden onset of an additional environmental variable.

Studies on joint control reveal that its onset can often be the result of systematic problem-solving repertoires, but the following example of Skinner's own recall behavior from an entry titled *Delayed Action of Formal and Thematic Prompts* (pp. 186-188) demonstrates that even when these strategies fail to produce the relevant controlling stimuli, joint control may still occur hours or even days later:

*I tried to recall the name of a wildflower
I picked as a boy but failed and stopped
trying. At least 24 hours later, possibly
as many as 48, I heard someone mention
honeysuckle and immediately recalled my
earlier attempt and knew that honeysuckle
was right.*


That the response "honeysuckle" maintained its strength over a span of 24 hours raises an important behavioral issue that is seldom discussed within the field of behavior analysis. Skinner's concept of *latent behavior* refers to responses that may be strong in one's repertoire, but whose physical dimensions are below the threshold of observability. Although the response itself is unobserved, its discriminable strength often serves as an important controlling variable for many instances of complex behavior. Take for example another passage from this same section of Skinner's notes:

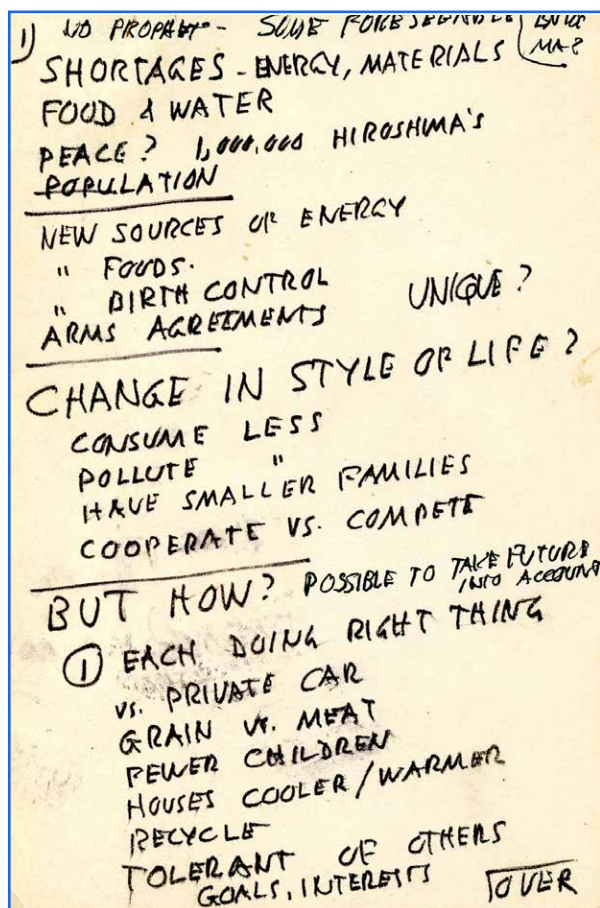
I tried to recall the name of a broker. I used a number of techniques, such as fantasy-ing a telephone call beginning, "Let me speak to Mr. _____, please." I was pretty sure of the ethnic character and length of the name. Then I began to go through the alphabet. After several run-throughs I got Palmer, Potter, and then finally Perry, which I saw at once to be correct. Just now, about 20 hours later, I was leafing through the telephone book, and the name Perry jumped out at me. After recalling it yesterday, I did not use it or, to my knowledge, repeat it, but the formal and thematic prompts I had been using were apparently still active.

Notice how the residual strength of the response "Perry" remained surprisingly discriminable long after it was successfully emitted as an instance of recall. Important issues of memory as a problem-solving phenomenon have also been covered extensively by Palmer, and they are distinguished from another area of self-analysis that evidently intrigued Skinner — memory as a stimulus control phenomenon.

Notebooks provides seven accounts in which responses unexpectedly emerged from Skinner's repertoire following long lapses of time since the conditioning had originally taken place. In one example (*A Face*, p. 65), Skinner instantly

tacts a film that he had not seen for 30 years merely after momentarily seeing a boy's face on the television screen. Skinner's curiosity of how a seemingly trivial controlling stimulus could have a powerful effect over such a long time span is evident in the final line of this entry: "Still—one expression on a face—?" Other examples of Skinner marveling at these instances of recall include the passages *50 Years Later* (p. 216) and *Memory* (p. 223), in which his recollections occurred after spans for as long as 50 years following the conditioning of the responses.

The examples of complex phenomena extracted from Skinner's *Notebooks* in this essay are only a small sample of the challenging examples from everyday life that call for a behavioral analysis. With respect to the difficulties that other scientific disciplines have with explaining complex subjects such as language, meaning, and knowledge, Skinner recalled a moment in which he "suddenly got a glimpse of the future, when we shall have an adequate theory of knowledge and can talk about all these things sensibly" (*Glimpses*, p. 274). On this 60th anniversary of the publication of *Verbal Behavior* it appears as though even the field of behavior analysis has only just begun to undertake an analysis of such things. The various examples from Skinner's *Notebooks* provide, for the behaviorist, a model for how we should critically interpret commonplace events in our complex environments if we are to take the necessary steps in eventually making Skinner's "glimpse" a reality. 



1) NO PROBABLY - SOME FORCE BEING USED (IS IT MA?)
 SHORTAGES - ENERGY, MATERIALS
 FOOD & WATER
 PEACE? 1,000,000 HIROSHIMA'S
 POPULATION
 NEW SOURCES OF ENERGY
 " FOODS.
 " BIRTH CONTROL
 ARMS AGREEMENTS UNIQUE?
 CHANGE IN STYLE OF LIFE?
 CONSUME LESS
 POLLUTE "
 HAVE SMALLER FAMILIES
 COOPERATE VS. COMPETE
 BUT HOW? POSSIBLE TO TAKE FUTURE INTO ACCOUNT
 ① EACH DOING RIGHT THING
 VS. PRIVATE CAR
 GRAIN VS. MEAT
 FEWER CHILDREN
 HOUSES COOLER/WARMER
 RECYCLE
 TOLERANT OF OTHERS
 GOALS, INTERESTS COVER


B. F. Skinner's Notes for a Talk



Skinner's notes talk about his thoughts when working out what he had to say. Few scientists have documented their personal reflections and daily thoughts as thoroughly as B. F. Skinner. Even fewer scientists stand out as both an American scientist and a social commentator. Scientists' notes with details written at the time of conversations and thought processes are rare. Skinner himself valued his notes, as he mentioned in one of them:

2/12/87

Garry Boring turned over 120,000 letters to the Harvard Archives. I will eventually have sent them a few thousands. And what a difference! Not 1 in 100 of mine says anything worth saying. Garry's are essays, as a selection recently published by Division 20 of the APA illustrates. I don't know whether he also kept a notebook. But his letters are what I have written as notes.

Skinner wrote notes by hand, in writing so difficult to read that in midlife he taught himself italic handwriting so he could read what he had written. To the left is an example of hand-written notes Skinner made in preparation for a talk. This card, along with other personal items, will be auctioned at the upcoming 2018 CalABA Convention. Proceeds benefit CalABA and the B. F. Skinner Foundation. 

Technology for Verbal Behavior Analyses

Bill Potter, PhD, BCBA

California State University, Stanislaus



Bill Potter discovered Behavior Analysis at Western Michigan University under the guidance of Dr. Alan Poling and Dr. Jack Michael (among others). His interests lie in the experimental analysis of behavior, particularly in the area of verbal behavior. He also has acquired some skills in computer technology and has applied them to research and application in Behavior Analysis. He is a professor, and chair, of the Psychology/Child Development Department at California State University, Stanislaus.

When *Verbal Behavior* was published, computers were in their infancy. They were limited and clumsy and large. Now, what was considered a major computer-based challenge, speech-to-text recognition, can be done on a cell phone and it is relatively fast, accurate and free. Computers are already being used in a number of different ways by behavior analysts—for instance computer-based instruction, discrete trial training, and as a communication aid. While those are important uses, this article will focus on the use of computers and supplemental technology for the experimental analysis of verbal behavior.

In a 1984 JEAB article, Jack Michael wrote:

With the advent of computer technology, it should be possible to overcome the difficulties of studying verbal behavior as an operant dependent variable.... But the same computer technology makes possible so many other unanticipated ways to study verbal behavior that any new developments probably will not appreciably resemble the older research.

Dave Palmer reiterated this point in his 2010 article, “Behavior Under the Microscope: Increasing the Resolution of Our Experimental Procedures.” The title itself implies the use of technology to aid in clarifying complex human behavior, particularly related to verbal behavior. Palmer notes that eye-tracker technology and general computer technology can increase our understanding of how the basic principles combine to produce the complex behaviors we are interested in explaining.

Neural networks have been used to develop models of behavioral phenomena that escape a molecular analysis (see William Hutchison’s papers for an excellent summary of some of that work). This article will not address such models, but will instead be dedicated to a few explorations related to *Verbal Behavior* that have been, and can be, conducted using readily available technology.

While speech-to-text technology is limited in that it does not capture the controlling variables for an instance of verbal behavior, it does offer some benefits. Drawing a parallel, writing down what a person says is akin to an observer counting the instances of a child kicking — you now have data points, although it does lack many of the details related to that instance. In fact, one could argue that a transcript of verbal behavior captures a fair amount of detail that a simple count misses — the topography of the response (minus some details like pitch and magnitude changes), the sequencing of those topographies and the frequency of particular vocal-verbal emissions. Adding in a time counter allows us to measure the rate, pauses, latencies, and temporal patterns (for instance, bursts of responding). While words tend to be the focus of linguists, this is only due to convention and ease of communication — they are quite aware that verbal responding has many dimensions — and they have been quite good at analyzing them. Some even incorporate context and function, for instance the Systemic Functional Linguistics approach. Their interpretations of the data differ markedly from a behavioral interpretation however.

Speech-to-text technology has improved greatly — in the process of writing this article I wanted to see how easy it would be to create a simple program that made a transcript of what I said, then beeped each time I said the word “the”. It was surprisingly easy. Google (among other companies) has great voice recognition software that you can use on your cell phone. Using LiveCode programming software I created a field for the transcription, added about 10 lines of code and it was complete. At this stage I would not use this approach for a real

time application (for instance providing reinforcement for emitting the word “the”) as the speed was not sufficient for applied or research purposes. With the rapid pace of technology however, that speed gap will be closed soon. If finances are not a barrier, commercially available products would likely work now.

Of course speech-to-text technology is a great time-saver in terms of transcribing the vocal-verbal behavior of people. In one study at CSU Stanislaus, we recorded preschool teachers talking to their students, and obtained about 30 hours of digital audio. Those 30 hours took over 90 hours to transcribe, and another 20 hours were required to conduct IOA (Inter-Observer Agreement) assessments. With a simultaneous audio recording, and the speech-to-text transcript, the undergraduate transcribers could have simply verified the transcripts, saving much time. For this research, we were interested in examining whether or not the teachers were using consistent “frames” when talking to the students. A computer program made short work of that — once we had the transcripts a simple program found all occurrences of a particular series of words and counted the frequency. Figure 1 shows a sample of the data from that study.

Given the ubiquity and power of computers, one can see some additional application of these tools to explore verbal behavior. For instance, several devices could be monitoring different participants in the same conversation, tracking utterances along a common timeline, to reconstruct a verbal interchange similar to those Skinner illustrated in *Verbal Behavior*, but showing overlapping utterances, the shift from speaker to listener, multiple control, etc. If you added in context variables you could get a fairly accurate view of behavior/environment interactions that are occurring at a very fast rate.

Tracking time along with utterances may also shed light on the size of a response. In 1998 Julie Vargas wrote:

The most critical problem in education is a lack of a unit of responding. In the traditional operant conditioning chamber, a lever press or key press was defined by operating an electronic switch, and every recorded response was thus functionally equivalent with every other response.

She could have written “the most critical problem in verbal behavior” and it would ring just as true. Some of

this technology might be useful in teasing apart some of the complexity surrounding this issue. For example, it might be possible to identify units based on temporal properties of an utterance — either the speed of emission, inter-response time or latency to a response might provide some insights once we have a critical mass of data in this area. t

While this article has focused on speech-to-text technology, there are a host of other tools available to researchers. Virtual Reality has been making great strides — it is possible to get an immersive Virtual Reality headset for under \$400. There are also a variety of free software packages to allow one to make a virtual reality movie. Coupling these movies with software can enhance a researcher’s control and measurement. Another device, the Kinect by Microsoft is a body sensor that works remarkably well in tracking the movements of a person’s arms, legs, head and torso. While used primarily for games, there is no reason why it cannot be adapted for use in research. Free software and online guides are available for this purpose. These are just two fairly sophisticated bits of technology available to researchers. There are many other peripheral devices that link to computers and trigger relays (switches). These can be wired or wireless. They can be inputs to the computer (counting something) or outputs (triggering something). In our lab we have used these devices to test a tactile communication system with success. In addition, we have put laptops into operant chambers — in one case the laptop sat behind hinged Plexiglas connected to micro-switches.

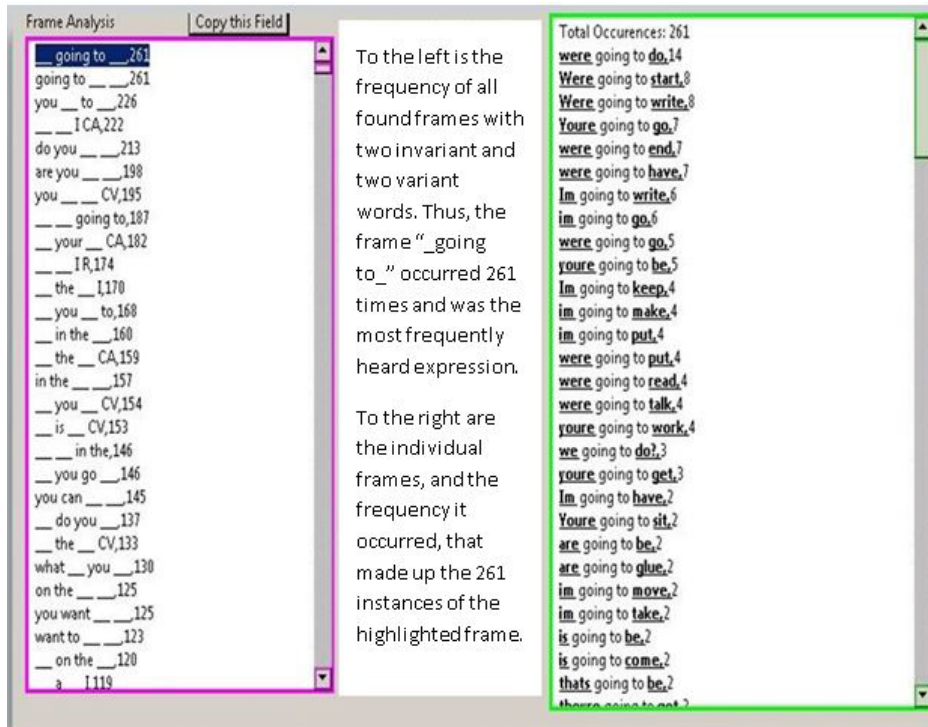


Figure 1

We displayed a variety of stimuli behind the Plexiglas to investigate second and third-order conditional discriminations. In another case we used the laptop to present a gradually increasing visual and sound stimulus to allow for a twenty-four hour pairing with increasing deprivation. This attempted to demonstrate the Surrogate Conditioned Motivative Operation. While still under investigation, preliminary results are promising. Since verbal behavior is behavior, these methods are clearly applicable to that domain of study.

Nearly every branch of science has benefited from the application of technology for research purposes. Behavior Analysis is no exception to this rule. It is my belief that computer literacy has become essential in nearly every discipline, similar to the necessity to be able to write clearly and to be familiar with some basic mathematics. These skills and tools may be particularly relevant to the study of verbal behavior due to its speed and complexity.

Bidirectional Naming and Verbal Behavior: An Important, Yet Challenging Research Agenda

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California State University, Sacramento



Dr. Caio Miguel obtained his bachelors degree in Psychology at the Pontificia Universidade Catolica de Sao Paulo and his MA and PhD at Western Michigan University under the co-advisement of Jack Michael and Jim Carr. He is currently a Professor of Psychology and Director of the Verbal Behavior Research Laboratory at California State University, Sacramento. He holds adjunct appointments at Endicott College, MA., and at the University of São Paulo, Brazil. He is the past-editor of *The Analysis of Verbal Behavior (TAVB)* and currently an Associate Editor for the *Journal of Applied Behavior Analysis (JABA)*. Dr. Miguel's research focuses on the study of verbal and verbally-mediated behaviors. He has given hundreds of professional presentations in North America, South America and Europe, and has had over 60 manuscripts published in English, Portuguese, and Spanish. He is the recipient of the 2013-2014 award for outstanding scholarly work by the College of Social Sciences and Interdisciplinary Studies at Sacramento State, and the 2014 Outstanding Mentor Award by the Student Committee of the Association for Behavior Analysis International.

Over the past several years, my students and I have been quite interested in the study of *bidirectional naming* (BiN¹), in particular, its importance on the development of verbal and verbally-mediated behaviors. BiN can be defined as a higher-order operant involving a bidirectional relation between speaker and listener behaviors in which the teaching of one of these components suffices to establish both. For example, after learning to say, “turtle” in the presence of its picture (tact), the selection of the picture when hearing the word “turtle” (listener) would emerge with no direct training (or vice-versa). In a seminal article published in the *Journal of the Experimental Analysis of Behavior* (JEAB) in 1996, Pauline Horne and Fergus Lowe described how language, and more specifically the BiN repertoire, may be established during typical child-caregiver interactions. After learning to discriminate her parents’ voices, as well as look at them (parents function as conditioned reinforcers), a child learns to orient to a particular object after hearing its name. For instance, when a parent says “shoe,” the child may orient to a particular shoe, and all other objects that have been called “shoe.” This is when the listener repertoire is established. When the child starts to echo the vocal production of others, the caregiver may point to the shoe and ask the child to say “shoe.” The echoic response (or any approximation) produces either direct or automatic reinforcement. When the child hears the product of her own echoic behavior, this may occasion the child to engage in both listener behaviors (look for the shoe) and further echoic utterances. When the caregiver points to a shoe and says, “shoe,” the sight of the shoe becomes a discriminative stimulus that evokes the verbal response, “shoe” as a tact. Later, when the child is alone, the presence of a shoe occasions the verbal response “shoe” whose “auditory” stimulus evokes the relevant listener behaviors of reorienting to the shoe(s). Horne and Lowe suggested that this bidirectional relation between listener and speaker repertoires is what comprises the object’s name. We would say that a child demonstrates BiN when an interdependence between listener and speaker repertoires is observed.

Thus, the development of BiN seems to have important implications for the understanding of language development, especially the phenomenon termed “language explosion,” since the establishment of strong listener and echoic repertoires may lead to the incidental learning of tacts, and sometimes, as we saw in some of our own studies, mands. Moreover, BiN plays an important role in reading comprehension. In his book *Verbal Behavior*, Skinner defined *textual behavior* as response topographies emitted in the presence of printed words or textual stimuli without the need for understanding what is being said. In practice, textual behavior is only one of the skills taught as part of programs aimed at developing reading, while comprehension is usually assessed by verifying (often through matching-to-sample procedures) that dictated words, pictures, and printed words are substitutable (i.e., equivalent) for one another, or have the same meaning. In many of the reading

¹I have proposed the use of the qualifier bidirectional to distinguish the technical term naming from its commonsense uses.

comprehension studies, participants are also able to read aloud and tact the pictures, suggesting a transfer between listener and speaker repertoires. It is only when these two repertoires are demonstrated (or present) that the “auditory” product of the participant’s textual response can serve as a discriminative stimulus for selecting the object that the word “represents.” Thus, it can be said that for participants to read with understanding, they need to behave as both speakers and listeners. In other words, they must demonstrate bidirectional naming. I have argued elsewhere (and so have many other behavior analysts), that without responding as a listener to her own verbal behavior, a child may not be considered verbal. It is only when a child has acquired both the speaker and listener repertoires (BiN), that she can react (understand) to what she is saying.

For the reasons mentioned above, BiN has been considered a building block for the development of verbal behavior, as well as other deemed “cognitive” skills, which can be interpreted as problem solving. The current applied research on BiN has mostly focused on teaching these skills to children who lack it. Most of these studies have shown that multiple exemplar instruction is an effective way to teach the BiN repertoire, so when children are told what an object is called, they can tact it and select it when hearing its name without being directly taught to do so. An undeniably important repertoire for learning incidentally.

If BiN is to be considered a building block or a “cusp skill”, its effects (as an independent variable) on the acquisition of other behaviors must be evaluated. The initial focus of this line of research was on how BiN could explain stimulus class formation. When participants are exposed to matching-to-sample (MTS) tasks, tacting the sample, either overtly or covertly, produces a stimulus, which in turn controls responses of selecting the correct comparison. In a series of studies conducted by Horne, Lowe, and their students, typically developing children were exposed to either common tact or listener training, and subsequently tested on the emergence of categorization (via a matching-like procedure), and the other untrained repertoire (listener or speaker). If BiN is necessary for the emergence of categorization, then it is only when both listener and speaker behaviors are present that children can categorize. In fact, the majority of these studies show that when participants fail categorization tests, they also fail to perform the untrained component of BiN. Once this component is trained, participants pass categorization tests. In some cases, when children fail categorization after demonstrating both speaker and listener behaviors, requiring them to tact the sample, whose response product evokes the whole BiN sequence, tends to produce accurate responding. Results from our own studies conducted with children diagnosed with autism, showed that speaker (expressive) training is more likely to produce listener (receptive) behavior than vice versa, and that both trainings lead to stimulus class formation. These studies make a strong case for the importance of verbal behavior in the formation of equivalence classes (or categorization).


Researchers seem to no longer argue about the necessity of BiN for stimulus class formation, since it may be one of the ways (if not the predominant way) by which humans learn how to categorize. This seems to fall in line with our current understanding of behavioral processes (e.g., respondent and operant conditioning), most of which have verbal analogs (e.g., one can learn to fear and avoid a stimulus just by being told of its aversive properties). Moreover, BiN seems to be an adequate theoretical model for the study of problem solving that includes precurrent verbal behavior (i.e., verbal mediation).

In a series of studies with college students on analogical reasoning, we exposed participants to a MTS test in which they saw a sample compound stimulus with two components that either belonged to the same class (C1A1), or two components that did not (C1A2). Participants had to select the comparison that was analogous to the sample. So, if the sample had two members of the same class (C1A1), participants would have to select the comparison that also had two related members (C2A2), as opposed to the comparison with unrelated members (C2A1). Conversely, if the sample was comprised of two unrelated stimuli (A1C2), participants also had to select the comparison with unrelated (A2C1), rather than related stimuli (A1C1). During training, participants learned to tact individual stimuli as “vek” or “zog” depending on the class in which they belonged, and /or tact their relationship as “same” or “different” when presented with stimulus compounds. Results suggested that participants had to attend to individual stimuli and tact their relationship to pass analogy tests. Participants’ reports and unprompted vocalizations suggested that they were tacting the samples as either “same” or “different,” whose response product evoked the selection of the correct “same” or “different” comparison. Thus, relational tact and relational listener behavior seemed to have played a role in the development of these analogies. In our most recent investigation of analogical reasoning, some participants overtly tacted individual stimuli (“vek-vek”) and their relation (“same”) when attending to both samples and comparisons prior to making the selection response. Barry Lowenkron suggested that accurate performances may depend on participants discriminating the *joint control* of the topography whose response product serves to evoke the selection response. In other words, participants may tact a compound sample as “same” and when they tact a related comparison also as “same”, the vocal topography “same” occurs under joint stimulus control which would in turn evoke the correct selection response.

In our continued quest to assess the role of verbal behavior in problem solving, we taught college students to tact unfamiliar stimuli, and subsequently intraverbally relate the stimuli belonging to the same class. We have found this strategy to be effective in producing the same kinds of performance observed in other stimulus equivalence studies in which participants undergo baseline MTS training. For example, after learning that “the tree for cardinal is buckeye,” and that “the reptile for buckeye is

black racer.”, participants who could not verbally state that “the bird for black racer is cardinal,” could also not select the picture of the cardinal in the presence of the picture of the black racer. Moreover, spontaneous intraverbal vocalizations emitted during posttests supported the notion that verbal behavior mediated participants’ matching responses. We have assumed that the tact of the sample (“black racer”) would generate a response product that would evoke an intraverbal (“black racer goes with cardinal”), the product of which would evoke the selection of the picture of the cardinal. This behavioral sequence has been termed intraverbal bidirectional naming (I-BiN). However, some participants have reported having visualized or imagined the stimuli during intraverbal training, as well as used these visualizations during derived relations tests. Horne and Lowe suggested that the establishment of listener behavior also leads to conditioned seeing, in that when hearing an objects’ name, the child can also imagine it. Thus, the same types of interactions that lead to the development of BiN may lead to the


development of visual imagining, which can later be used as a problem-solving strategy. We have been tentatively referring to this process as visual bidirectional naming (V-BiN) while exploring its verbal origin, and the role it plays in complex MTS performances.


Unfortunately, the behavioral processes that we have been studying are difficult to observe, and in some cases, inferred from what is currently known about stimulus control. The difficulty in isolating these (covert) variables lead us to resort to this sort of correlational methodology, and make interpretations about unobserved processes that are often times uncomfortable to behavior analysts. However, the study of covert verbal behavior and private stimulation as physical things is important as it may provide a monistic alternative to these so called “mental events.” Skinner’s analysis of verbal behavior continues to serve as a source of inspiration during our attempt to understand complex verbally-mediated (or cognitive) processes from a radical behaviorist standpoint. 



brevis

B. F. Skinner Foundation Offers Creative Ways to Support Its Activities

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The Cumulative Progress of Skinner's Functional Analysis of Verbal Behavior

Sam Leigland, PhD
Gonzaga University

There are two ways in which a scientific field can develop and proceed. One way is a “top-down” strategy (sometimes related to a “deductive” approach) in which the field begins with common, high-profile terms and concepts that are assumed to be central to the subject matter of the field. Hypotheses are then formulated for the purposes of identifying variables presumably involved with the concepts under investigation. Theories are formulated and potentially-important variables are proposed for the purposes of experimentation. If an experimental program produces findings which appear to support the hypotheses, the explanation of the original concept is considered to have been supported. Alternative theories are proposed, and competition among the theories produces an ever-expanding set of theoretical terms (often without clear definitions) and enormous and ever-increasing amounts of experimental data. Because of the nature of the theoretical terms, it is virtually impossible to show that any of the theories must be discarded based upon empirical evidence.

Another way is a “bottom-up” strategy (an “inductive” approach) in which unfocused or even accidental empirical investigations of the natural world lead to surprising discoveries. These discoveries, when pursued by further and increasingly sophisticated and detailed investigation, begin to define a pathway to powerful methods and useful information.

The first of these strategies describes the practices of virtually all of the social and behavioral sciences, including general experimental psychology. The second strategy is characteristic of physics, chemistry, biology, and behavior analysis. The development of Skinner’s “experimental analysis of behavior” followed the inductive, discovery-based pathway of the natural sciences, and like those sciences, effective practices of basic research have led to numerous applications in a wide range of human affairs.

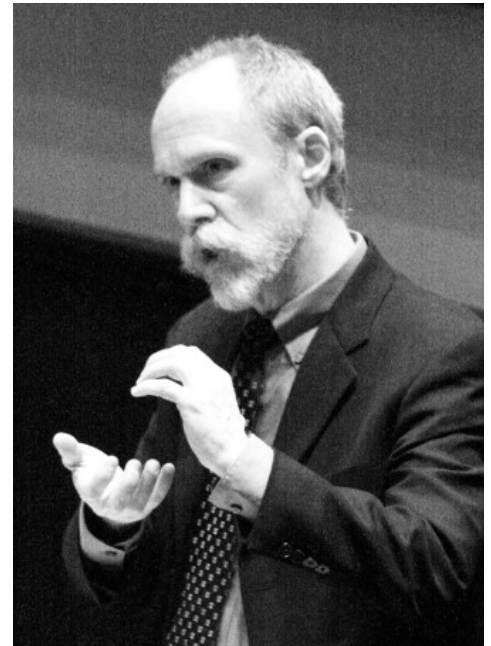
Early Development: The Analysis of Verbal Behavior

Skinner’s early experimental preparations led to the development of the operant chamber, which rapidly led to a series of unexpected discoveries regarding the nature of the operant response class, the functions of reinforcement and reinforcement schedules, and operant stimulus control. As time went on, it became clear that human verbal interactions involved the interacting effects of consequences, context, and conditions of deprivation and aversive stimulation, and that such interactions would fit clearly into an operant analysis of verbal behavior.

After years of basic research and interpretive analyses regarding verbal interactions from an operant perspective, Skinner organized a seminar on verbal behavior at Columbia University. Ralph Hefferline’s 1947 notes during the seminar became the first written source material on Skinner’s analysis of verbal behavior. Ten years later, Skinner’s masterwork, *Verbal Behavior*, was published to generally favorable reviews (with one notorious, misguided, and unfortunately influential exception).

Verbal Behavior Applications

Skinner’s *Verbal Behavior* had been a monumental undertaking, and the examples used to illustrate such basic verbal operants as the mand, tact, and



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intraverbal were based on what could be called a behavioral phenomenology--the interpretation of observed human behavior outside the laboratory in terms of a functional, technical scientific vocabulary which had been based on processes discovered in the laboratory. The book *Verbal Behavior* was an "exercise in interpretation" but the road to programmatic experimental research was not immediately evident, although a number of innovative basic research projects began to appear.

The major insight that appeared in the behavior-analytic community was that the processes involved in the elementary verbal operants could be put to use in the teaching of verbal behavior to those with difficulties in acquiring a verbal repertoire. The question of, "How do you teach language to people without using language?" had been answered; the application of the behavioral technology of the functional analysis of verbal behavior. As it is typical of an inductively-based, cumulative and progressive scientific field, a basic-research field inevitably produces unexpected applications. It is the history of quantum mechanics, and it is the history of the functional analysis of verbal behavior.

Complex Verbal Interactions

In the later chapters of Skinner's *Verbal Behavior*, a variety of complex verbal interactions were considered, including verbal behavior under the control of private events, thinking, and the development of complex verbal behavior. Regarding the latter, Skinner described situations in which a stimulus (such as a vase or other object) could acquire verbal functions without direct training involving contingencies of reinforcement. The phenomenon was as if stimulus discrimination training, usually required for the acquisition of stimulus control, could be replaced with a "short-cut" of some kind as the acquisition of the early verbal repertoire progressed. Skinner described the phenomenon as the "end result of a long process of verbal conditioning" (p. 360).

Building upon Skinner's discoveries, the great behavior analyst and experimentalist extraordinaire, Murray Sidman, came across some unusual data regarding the teaching of reading, and began to see if it could be replicated under more controlled conditions. This led to a brilliant program of research which clarified the contingencies involved with a surprising expansion of the scope of verbal behavior development.

This research program, reported in his 1994 book, *Equivalence Relations and Behavior: A Research Story*, revealed the conditions under which conditional discrimination training among classes of arbitrary stimuli may produce many untrained, multiple, reversible relations among stimuli. The resulting equivalence classes also allow for transfer of function, in that if a stimulus of the class is trained to take on a behavioral function (reinforcer, discriminative stimulus, eliciting [respondent], etc.), other members of the equivalence class will take on the function without training. For example, if an arbitrary stimulus in one set is trained to become a conditioned reinforcer, all of the corresponding arbitrary stimuli in the other sets will become conditioned reinforcers without training.


These findings have shown what it means, in a functional/behavioral sense, for arbitrary stimuli to take on "symbolic" functions--that the stimulus participates in multiple, reversible, functional relations among sets of arbitrary stimuli. We can see such functions when we observe the relations between three completely different stimuli; for example a table as an object, the sound "table", and the written marks, "table". Each functionally "stands in" for the other, so to speak. These findings have had wide-ranging implications, as well as applications.

Building upon Skinner's research and Sidman's equivalence class discoveries, research by S. C. Hayes and colleagues led to the introduction of the concept of relational frames. Beyond the relation of stimulus equivalence, multiple exemplar training among sets of arbitrary stimuli may result in additional derived relations, expanding the scope of new and complex verbal phenomena even further. Examples of such relations may be characterized informally as equivalence, opposite, difference, comparison, hierarchical, and others. Technical descriptions of this process can become quite complex, but an example from published research can illustrate the scope of the derived relations.

A study by Whelan and Barnes-Holmes, published in *JEAB* in 2004, reported the establishment of arbitrary stimuli as conditioned reinforcers in an experimental context. What was different about the procedures was that the conditioned reinforcement function was established without using an unconditioned (or primary) reinforcer, or any other reinforcer. It was achieved through an arbitrary conditional stimulus previously trained (via nonarbitrary stimulus relations) in the relation of "opposite". Conditional discrimination training involving the application of this stimulus to the conditioned punisher transformed the stimulus function to that of a conditioned reinforcer.

Such findings are part of the continuous path from Skinner's original research to increasingly complex analyses of verbal behavior. Further, all of these research programs have produced applications to numerous domains of human affairs, including education, organizational behavior, and effective clinical therapies.

We might conclude by borrowing from an old joke about the weather. One could say that "Everyone talks about language, but nobody does anything about it." Well, there is a natural science that is actually doing something about it, and with it, and it is called *behavior analysis*. Where will the discoveries lead next? As Skinner wrote in *Verbal Behavior*,

One of the ultimate accomplishments of a science of verbal behavior may be an empirical logic, or a descriptive and analytical scientific epistemology, the terms and practices of which will be adapted to human behavior as a subject matter. 

“Conditioning the Behavior of the Listener” Redux

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This edition of *Operants* celebrates the 60th anniversary of the publication of Skinner’s masterpiece, *Verbal Behavior* (VB). A relatively brief section of the book, titled “Conditioning the Behavior of the Listener,” represents potentially the most novel and far-ranging contribution of a book that itself offers a revolutionary approach to our understanding of what people call language. As a background to further discussion, I would like to comment briefly on a controversy that arose on the occasion of an article celebrating the 50th anniversary of the publication of VB.

Reflections on “The Long Goodbye...”

Ten years ago, in an article titled “The long goodbye: Why B. F. Skinner’s *Verbal Behavior* is alive and well on the 50th anniversary of its publication” I argued that the book was healthier than ever. Contrary to reports of its demise that began with Chomsky’s review and which included more recent attacks from within behavior analysis itself, principally by proponents of Relational Frame Theory (RFT), the interpretation presented in *Verbal Behavior* is plausible, adequate, and parsimonious. The evidence for the health of the book was robust sales and increasing numbers of citations, and the evidence for the adequacy of the interpretation was the wide-ranging practical and theoretical applications the book has spawned.

Representatives of the RFT camp complained that the article had failed to mention the “extensions and amendments to Skinner’s account” that had emerged from work in their paradigm in the ensuing years. But the stated goal was to celebrate Skinner’s book and the impact it has had, despite Chomsky’s apparent stake in its heart, not to tout RFT. Moreover, the foundational book on RFT, published in 2001, specifically asserted its independence of Skinner’s account: “The term ‘post-Skinnerian’ suggests that it is now time for behavior analysts to abandon many of the specific theoretical formulations of its historical leader in the domain of complex human behavior, on the grounds of the empirical and conceptual developments in that very field.” RFT is “post-Skinnerian because if the account is correct, many of the most prominent Skinnerian ideas about human complexity must be put aside or modified virtually beyond recognition.”

Although it has been almost 20 years since these words were written, they call for a response. First, Skinner was not the only behavior analyst to offer “theoretical formulations” of complex human behavior. Second, by using such locutions as “post-Skinnerian” and “historical leader” the proponents of RFT singled out one person (which suggests personal envy); but it is about an entire scientific discipline. Third, Skinner and many others carried out experimental analyses of behavior and as far as I can tell no one in the RFT camp has produced such analytical research. Their research, though copious, is what I refer to as *demonstration research*, that is, research that demonstrates a certain behavioral phenomenon and some of the circumstances under which it occurs, but not the variables responsible for it. Demonstration research is not without value, but it is far from the experimental analysis that has produced the



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behavioral laws that define our field. Note that Skinner did not merely propose behavioral principles; such principles—laws—were induced from countless analytical experiments. While further research is surely needed to fully account for complex behavior, that research cannot simply be demonstration research; it must be experimental analysis. In the meantime, what Skinner calls interpretation—and most other scientists call theory—is a time-honored tradition in the natural sciences beginning at least with Newton.

RFT deals with complex verbal behavior. An analysis of such behavior based on the extant principles of operant learning is sufficient to account for it. Although I could reference several sections of Skinner's book in such an enterprise, I will focus my comments in this article on one section in his book which deals with conditioning the behavior of the listener.

Conditioning the Behavior of the Listener

Speakers and Listeners

Skinner has written that, "*Verbal Behavior* is an interpretation of the behavior of the *speaker*, given the contingencies of reinforcement maintained by the community." Thus, the book deals primarily with the behavior of speakers. It may seem that Skinner ignored the behavior of the listener because of his insistence that the behavior of the listener in mediating the verbal behavior of the speaker is not itself verbal. But he vacillated on the importance of the listener's behavior. For example, he wrote "an adequate account of verbal behavior need cover only as much of the behavior of the listener as is needed to explain the behavior of the speaker" (p. 2). Elsewhere he suggested that the behavior of the listener is more complex and that "we need to look more closely at what they do" and that their behavior (as listeners) "calls for analysis." If sheer number of references to the speaker and the listener in *VB* are any indication, Skinner did not neglect the listener at all. The word "listener" occurs 793 times in *VB* compared to 893 instances of the word "speaker".

The operant behavior of the listener in mediating (i.e., reinforcing) the behavior of the speaker differs from the verbal behavior of the listener which I called "listening." I have argued that the behavior of listening is no different than the behavior of speaking. Skinner himself stated as much when he wrote, "As another consequence of the fact that the speaker is also a listener, some of the behavior of listening resembles the behavior of speaking, particularly when the listener 'understands' what is said" (p. 10-11). The only change I would make to his statement is that the behavior we call "listening" is speaking, albeit usually subvocally.

"Conditioning" the Listener's Behavior

Even though Skinner addressed the listener's behavior throughout *VB*, one section stands out and that

is the section, titled "Conditioning the Behavior of the Listener." Here is how Skinner introduced the topic:

In the behavior of the listener (or reader), as we have so far examined it, verbal stimuli evoke responses appropriate to some of the variables which have affected the speaker. These may be conditioned reflexes of the Pavlovian variety or discriminated operants. The listener reacts to the verbal stimulus with conditioned reflexes, usually of an emotional sort, or by taking action appropriate to a given state of affairs. The autoclitic of assertion makes such action more probable. Relational autoclitics, especially when combined with assertion to compose predication, have a different and highly important effect. Since it does not involve any immediate activity on the part of the listener (although responses of the other sorts already noted may take place concurrently), we detect the change only in his *future* behavior. (p. 357)

In this brief section, Skinner described in behavioral terms what cognitive psychologists refer to as memory and discuss in terms of the information processing system. Skinner said that a listener's behavior can be conditioned by simply hearing (I would say "listening" to) a speaker. But, I believe that Skinner was using the term "conditioned" figuratively, or as a metaphor because the resulting change in the listener's behavior looks like what would happen *if* his or her behavior were explicitly conditioned. Consider an example. Suppose I tell you that to get to my house you must take a right when you see the Costco. Later when you are driving to my house and see the Costco, four things could happen. You could just take a right. You could say to yourself something like, "Oh, there's the Costco he told me about; I have to turn right" and then turn. You could do both at the same time. Or, you could do neither. If you turned when you saw the Costco, then either the sight of the Costco evoked turning without any self-talk or it evoked self-talk which in turn evoked turning. Or, the sight of the Costco evoked both simultaneously. Regardless, your behavior was solely the result of my earlier statement. In other words, in the absence of my statement, you would neither have turned nor said anything to yourself about turning at the Costco. We could, of course, have achieved the same effect by directly reinforcing turning right or saying, "I have to turn right" at the Costco.

Consider another, equally common, example. The first time you meet someone, she says, "Hi, I'm Julie." If you then say "Julie" the next time you see her, or if you say "Julie" in answer to the question, "Whom did you meet today," then your behavior of saying "Julie" has been altered as a function of hearing her name. Of course, we could have directly conditioned your response "Julie" by pointing to her or to a photo of her and asking, "Who's that?" and then reinforcing your answer of "Julie." Or, we could have asked "Whom did you meet today?" and then reinforced your response of "Julie." Either way, the outcome looks the same: the stimulus control by the sight of Julie or the question,

“Whom did you meet today?” over the response “Julie.”

How do we explain the seemingly magical effects of the speaker’s verbal behavior on the future behavior of the listener? The speaker says something at one time and the listener’s behavior is affected by it later, which could be immediately or far into the future. Cognitive psychologists would appeal to memory structures and systems to explain the phenomenon. For example, they might say that my statement was encoded and then entered your short-term memory and that with the help of rehearsal, it was stored in long-term memory and was then retrieved when the appropriate cues were present.

The problem is that there are apparent gaps in the behavioral evidence for the phenomenon. Thus, after I make a statement, most of the time the listener is not observed doing anything special. Then, later the listener behaves appropriately with respect to the stimuli or events described in the statement. The question is what happens between hearing the statement and the occurrence of the appropriate behavior? The cognitive approach invents hypothetical structures and processes (e.g., encoding, short- and long-term memory, storage, rehearsal, retrieval, etc.). The behavioral approach does not appeal to hypothetical structures or processes, but rather to behavioral events. But what are those behavioral events? How do they explain the phenomenon, and why is the behavioral interpretation preferable to the cognitive one?

It might be tempting to say that cognitive psychologists are dealing with a completely different phenomenon. But the verbal behavior of cognitive psychologists in describing/explaining the phenomenon is controlled by the same variables as the verbal behavior of the behavior analyst. The different ways of conceptualizing, that is, talking about, the problem, however, have major implications for theory and practice. The cognitive explanations reflect the types of theories to which Skinner was opposed, that is, “any explanation of an observed fact which appeals to events taking place somewhere else, at some other level of observation, described in different terms, and measured, if at all, in different dimensions.” The behavioral descriptions and explanations, on the other hand, are more parsimonious and point to observable or potentially observable and, thus, directly testable, events.

As a step in trying to explain the phenomenon from a behavior-analytic perspective, we might look at examples where a speaker’s verbal behavior (i.e., the stimuli generated by it) do not affect the listener’s behavior. For example, it is possible that you do not turn right at the Costco, or tell yourself to. Likewise, it is possible and, indeed, common, not to remember Julie’s name. So, what is the difference between remembering and not remembering to turn at the Costco or Julie’s name?

Before answering this question, it is instructive to remember that any explanation of a behavioral phenomenon must be based on the functional analytic unit, the four-term contingency. This is what we mean by theory in behavior analysis. In simpler terms, we need to look at what behaviors occur under what circumstances and what reinforcers shape

and maintain those functional units. Thus, in cases in which a speaker’s verbal stimulus results in changes in a listener’s future behavior, we must ask what the listener does (or does not do) at the time he or she hears the speaker, under what circumstances (i.e., what the MOs and SPs are) and what the reinforcers are. We must also ask the same questions about instances in which a speaker’s verbal stimulus does not result in changes in the listener’s future behavior.

The Role of Listening in Conditioning the Listener’s Behavior

In order for a listener’s behavior to be conditioned by a speaker’s verbal stimulus, that is, for the listener’s behavior to be instructed, the listener must be listening. What does it mean to be listening? People frequently say things like “Listen to me,” or “Pay attention to what I’m saying.” What exactly are they asking us to do? How would you teach a child diagnosed with autism, or even a very young language-learning child to pay attention or to listen? To answer these questions and to understand what we mean when we say someone is *listening* we must identify the variables that evoke that response.

To listen (vs. to behave as a listener) means to talk to oneself (usually, but not necessarily, sub-vocally) about what the speaker is saying. Specifically, we are said to listen when we are echoing or engaging in intraverbal behavior along with a speaker. To be clear, I believe that we are engaging in self-talk all the time, day and night, awake and asleep. The only question is whether we are talking about what a speaker is talking about or not. If my telling you to turn right at the Costco or Julie telling you her name results in your remembering what to do at the appropriate time, then you must have made some verbal response at the time, and the most likely ones are echoic or intraverbal responses. The function of making a response at that moment is to transform the verbal stimulus generated by the speaker into a verbal response by the listener. In fact, it is difficult to imagine any scenario where the listener would remember something generated by a speaker’s verbal stimulus without making some kind of response at the time of the stimulus.

The idea that the listener sub-audibly echoes the speaker, raises objections from some of my behavior analytic colleagues that they couldn’t see how that was possible. It is very difficult to introspect and observe oneself echoing what one is hearing. The listener does not echo simultaneously; that would be impossible. As Skinner noted, “The speaker and listener do not, of course, emit the responses simultaneously. The time required for the echoic response may be on the order of a fraction of a second...It is generally subaudible and difficult to examine” (p. 270). However, it seems logical that a listener must make some response at the time the speaker does, or else we fall into the trap of cognitive explanations.

Returning to our two examples, I’m suggesting that you said to yourself something like “Turn at the Costco,” and “Julie” or “Nice to meet you Julie,” at the moment you heard the statement from the speaker. Those echoic

and intraverbal responses served to convert the stimulus from the speaker into a response by you. In the case of the Costco directions, unless the Costco was present, the sight of the Costco alone might not be sufficient to evoke turning. However, seeing the Costco sign, might evoke a textual response, and could have evoked something of what you said at the moment I gave you the direction, such as “Oh, turn at the Costco.” In the case of meeting Julie, she was present when you made the response “Julie” or “Nice to meet you, Julie.” Thus, we have both the response and the circumstances under which it was conditioned. The only piece of the puzzle remaining to fit into place is the reinforcement. There are a couple of possible sources of reinforcement for the echoic and intraverbal responses. The first is conditioned automatic reinforcement for what Dave Palmer has referred to as “achieving parity.” Or, as Skinner wrote: “In echoic behavior, the correspondence upon which reinforcement is based may serve as an automatic conditioned reinforcer” (p. 68).

A second possible source of reinforcement for the echoic or intraverbal responses comes from the speaker him- or herself if the listener responds audibly. So, for example, if the listener says, something like, “Okay, I have to turn when I see the Costco, right?” and the speaker says, “That’s right.” Or when you say, “Nice to meet you Julie,” and she says “Thanks, it’s nice to meet you too.” In either case, the reinforcement alters the functions of certain events, in the first example, the sight of the Costco sign or store, and in the second case, the sight of Julie. Thus, when any of these circumstances occur in the future, they should evoke the relevant responses. This speculative account of listening and of the listener’s behavior being conditioned, or instructed, appeals only to observed, or potentially observable, behaviors, current circumstances, and function-altering reinforcement, and, thus, is parsimonious.

It is possible and even likely that often a listener doesn’t listen or pay attention to what a speaker says and, thus, the listener’s behavior is not conditioned or instructed. A behavior analytic theory must also be able to account for these “failures” of conditioning. The question then becomes what one is doing and under what circumstances, when they are said *not* to be listening or paying attention. Consider a common example. Suppose you are in a class, or in a presentation at a conference and you are not “paying attention.” What exactly are you doing? The answer is that you are still talking to yourself, but not about what the speaker is talking about. There is very little or no echoic behavior and your intraverbal behavior is about something other than what the speaker’s intraverbal behavior is about. We call it daydreaming, but it is really self-talking and visualizing—both behaviors.

If my interpretation presented in this essay is correct, the listener’s behavior is directly conditioned in the sense that the reinforcement alters the function of variables that evoke the instructed behavior. Or, as a cognitive psychologist might say, in the presence of relevant cues, the appropriate memory is retrieved. My interpretation may not be correct,

but is parsimonious, based as it is only on the functional analytic unit—the four-term contingency. Moreover, it can potentially be tested and it has implications for teaching kids to remember verbal material.

Coda

I’d like to finish my brief comments on how the listener’s behavior is conditioned or instructed where I started, namely, with a discussion of the real, or perceived, schism between behavior analysis and RFT. Let me first qualify my remarks by admitting that I’m not well-versed in RFT or even stimulus-equivalence research. Having said that, let us discuss a type of example cited by relational frame theorists to illustrate “derived relational responding.” If we teach a child with a sufficient history to say “sextant” in the presence of the object, she will later be able to point to the sextant when asked to do so. Conversely, if we teach her to point to the sextant in an array of objects, she will then be able to say “sextant” in the presence of the object.

Now, there are at least two possible explanations for this effect. According to RFT, the child has acquired a “derived coordination relation” between the word and object. But citing a “coordination relation” as an explanation of the child’s behavior is an example of an explanatory fiction or, as I prefer to call it, a circular explanation. This is because the only evidence for the “derived coordination relation” is the responding by the child. RF theorists have simply named the behavioral relation and then converted the name into an explanation. Being able to point to the sextant after having learned to tact it *is* the derived coordination relation.

The phenomenon to be explained is that the first time the child is taught to tact the sextant, she can then point to or select one when asked or vice versa. This is the derived part of derived relational responding. The question is what best explains the novel instance. To be fair, relational frame theorists do point to some of the causal variables when they say that we learn such relations through contingencies of reinforcement, and they often describe the probable incidental teaching that occurs by parents that very likely establishes the child’s tendency to respond to such “word-object bidirectional relations.” We should have no trouble calling such training multiple-exemplar training because parents carry out incidental teaching with multiple objects and words. We can even accept the claim that such training occurs in the presence of contextual cues (other stimuli) some of which might be verbal. And, finally, there is no reason for us to object to calling the behavioral products a “generalized operant response class,” as long as the name isn’t cited as the explanation of the behavioral relation.

Researchers are free to call the phenomena they study whatever they want. But, that is probably where our agreement with relational frame theorists ends because while the incidental teaching has clearly established a behavioral repertoire, no matter what we call it, we can only cite that teaching as an explanation in the broadest possible

sense. For the reasons mentioned above, we must, however, vigorously object to saying that the behavior is explained as responding “in accordance with a derived coordination” or that the child treats the object and the word the same as each other. I’m not even sure what that means. If we change the example slightly from a sextant to a book, it is clear that the child can pick up the book, turn its pages, and possibly read it, but she cannot do those things with the word. Conversely, she can utter the word “book,” but not the object.


A simpler explanation of the phenomenon is possible. The question we must ask is *What does the child do at the moment each exemplar is taught*; in other words, *What is the discriminated response in each instance*? For example, saying “This is a book” to a preverbal child will have no effect resembling that of a person with an appropriate history whose behavior can be conditioned with respect to that book and, perhaps, all books. Therefore, it seems obvious that the history of multiple exemplar teaching is the difference between the two individuals. The critical question is what exactly is being taught or learned. The RF theorists say that what is being learned is a generalized response class. But, response classes aren’t learned; specific responses are. So, what might those specific responses be and what are the behavioral units? One possibility is that when asked to pick the sextant from an array, the child says “sextant” (either overtly or covertly) echoing the speaker. Then, when in the presence of the sextant, she is asked what is that, the response “sextant” is evoked because it was reinforced previously in the presence of the sextant. Conversely, if she is taught to say “sextant” in the presence of one, later when she is asked to point to the sextant, she already has a tendency to say “sextant” in the presence of one and can, thus, point to it. Specifically, if she can already say “sextant” in the presence of one, then when asked to point to a sextant among an array of objects, she will likely echo and then self-echo “sextant” while scanning the array. Seeing the sextant evokes “sextant” as a tact, and the joint control over “sextant” by the product of her self-echoic response and the object evokes a selection response.

The listener must listen to the speaker, that is, the speaker’s verbal stimulus must evoke an echoic or intraverbal response in the listener. For example, upon hearing “This is a sextant,” in the presence of one, a sophisticated listener may echo some or all of the statement and may engage in intraverbal behavior, such as “Oh, sextant; that sounds kind of like a sexy text,” or “sextant; that’s a neat or weird looking device; I wonder what it does.” The listener’s verbal behavior may be audible or sub-audible. If audible, the reinforcement for it may come from the speaker (e.g., “That’s right, it’s a sextant”). If sub-audible, the reinforcement is likely automatic in the form of what Palmer has called “parity” between the speaker’s verbal stimulus and the listener’s response product, both of which are “sextant.” Either way, the listener’s verbal behavior becomes discriminated and comes under the control of the sight of the sextant and the verbal stimulus “sextant” or “Point to the sextant.”

Relational frame theorists pejoratively refer to the above analysis as “mediational,” and therefore less parsimonious than an RFT account. But, I can see no way that hearing, “This is a sextant” can result in relevant behavior if the listener doesn’t behave verbally in some way at the time of the verbal stimulus. A parsimonious explanation makes the fewest assumptions, and inferring some ongoing behavior is not much of an assumption. After all, we never stop behaving. There is, in fact, a substantial amount of research on delayed matching-to-sample with pigeons and joint-control with children showing that mediated responding not only occurs, but it can influence appropriate responding in both cases. Relational Frame theorists never explain the mechanisms by which multiple exemplar training actually produces derived relational responding other than saying that such responding is a “generalized or overarching response class,” which once again simply gives the responding a name. Like cognitive psychologists, RF theorists ignore the gaps between events and behavior and give us jargon that distracts us from their omission or from the behavioral events that may be going on.

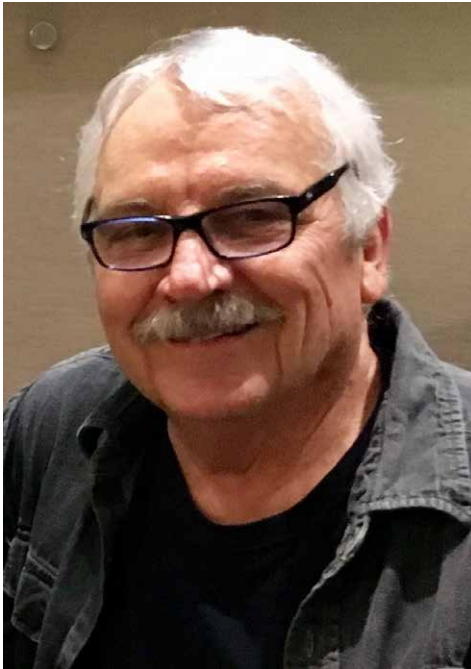
This blunt, albeit brief, appraisal of RFT above could easily be challenged, not by pointing to the copious research generated by RF researchers, which I have called demonstration studies, but to analytic research that identifies and isolates the controlling variables for the derived responding. Accounting for the variability in responding in all research on derived relational responding is crucial for a satisfactory explanation of the phenomenon. But I predict that such analytic research would merely support an account in Skinner’s terms.

Conclusion

To conclude, describing the contingencies of reinforcement that affect a listener’s behavior when a verbal stimulus occurs and alters their future behavior is crucial to providing a satisfactory explanation. Talking about it as conditioning the listener’s behavior points to extant principles, which makes it a parsimonious explanation. The beginning of such an analysis can be found in Skinner’s book *Verbal Behavior* published 60 years ago. The interpretation presented in *Verbal Behavior*, and especially the analytically derived principles upon which it is based, still seems sufficient to account for much complex behavior whether we call it verbal or not. 

Skinner on Speaking the Truth

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"We connect . . . truth . . . with sentences; and sentences belong to language. But, as theorists, we know nothing of human *language* unless we understand human *speech*."

P. F. Strawson "Meaning and Truth"

In his role as literary critic, the 19th century American writer Ambrose Bierce has been credited with delivering this biting one-liner: "The covers of this book are too far apart." Whatever the obvious shortcomings of Bierce's book review—e.g., the review's lack of specifics, given its brevity—many have considered it a devastating critique. That said, one may question what evidence (if any) exists that it had a negative impact on the success of the book. Did many readers decline to read the book or, having read it, pan it contents, because of the review? Given Bierce's status as a literary critic who wielded considerable influence—and was therefore feared by many writers—it seems likely that his review had some detrimental effect on the book's success. Unfortunately, for those historians of literary criticism curious about the effectiveness of Bierce's pithy critique, the review's effect cannot be gauged. Why? Because, as the historical record shows, there is some dispute about which book was the actual target, making it difficult to convincingly gauge the review's effectiveness.

Like Bierce, Noam Chomsky also wrote a devastating critique of another's work. However, unlike Bierce's review, there is no question regarding Chomsky's chief target—as evidenced by the title of his 1959 paper, "A Review of B. F. Skinner's *Verbal Behavior*". Furthermore, unlike Bierce's review which, though highly critical, was dressed in humor, Chomsky's blinkered review was mean-spirited. As R. L. Trask and B. Mayblin observed in their *Introducing Linguistics*, Chomsky's rhetorical style consisted of attacking *Verbal Behavior* "scathingly, even savagely." Based largely on his review, Chomsky "made his bones" within the then nascent discipline of cognitive psychology. But how effective was the review? Again, unlike the Bierce review, we know Chomsky's chief target, so we are able to address this question. Consider the following evaluations of his review's success within disciplines outside behavior analysis. In *Human Agency and Language*, C. Taylor opined that Chomsky's review had "destroyed" Skinner's account of language, rendering it "wildly implausible." Similarly, F. J. Newmeyer, in *Generative Linguistics*, stated that the review "knocked out the underpinnings" supporting the behavioral approach. As a final example, in *Chomsky: Ideas and Ideals*, N. Smith and N. Allott stated that the review had "demolished" Skinner's account of language, opining that it is "perhaps the most devastating review ever written." However, as history evidences, the review did not succeed in destroying or demolishing *Verbal Behavior* (hereafter *VB*). There are a number of factors responsible for its viability. Of these, substantial credit must be given to the decades-long contributions of Dr. Jack Michael.

In an article "Jack Michael's Musings on the 60th Anniversary of Skinner's *Verbal Behavior*" Barbara Esch, John Esch, and David Palmer published their recent interview with (and brief commentary about) Jack

Michael. As the authors observed, “for six decades, Jack’s mastery of the book has never been equaled, not even by Skinner himself.” Such encomium is deserving, given that Michael has devoted much of his adult life to the study of *VB*, imparting to others—through his teaching, writing, and active participation at conferences—what he has learned. During the interview, he was asked a retrospective question about his teaching; namely, what, upon reflection, does he now think he should have done differently with respect to his teaching of *VB* over the decades. He answered “I wish I had covered the last five chapters more thoroughly.” Those chapters—15 through 19—comprise the fifth (and last) part of *VB* entitled “The Production of Verbal Behavior”. In Michael’s current view, a thorough study of the material in the latter half of *VB* makes it easier to understand why Skinner believed that *VB* would be eventually recognized as his most important contribution. Furthermore, according to Michael, *VB* deserves this heightened status “because of its contributions to *behavioral epistemology*” (emphasis added).

In the interview Michael informally defined *behavioral epistemology* as “the science of knowledge”. More specifically, behavioral epistemology investigates (1) “how people learn language” and (2) “how language allows us to ‘know’ things”—in this context, *knowing things* means engaging in speaker and listener behaviors about reality. In this article I will examine Skinner’s account of what it means to know things about reality by focusing, in particular, on Skinner’s account of truth. What scientists purport to know are facts about their subject matter (typically organized as a theory). In evaluating the factual claims of science, a central task (arguably *the* central task) is determining whether or not the claims are true. In Chapter 18 of *VB*—entitled “Logical and Scientific Verbal Behavior”—Skinner provided the broad outlines of a radical behaviorist’s approach to determining whether or not a statement is true, with particular emphasis on the truth conditions for *scientific* statements.

Speaking the Truth: Two Accounts

Historically, two of the major theories of truth have been: (1) the correspondence theory of truth and (2) the pragmatist theory of truth. Did Skinner embrace either? In addressing that crucial question, I first briefly review these two approaches to truth.

The pragmatist theory of truth. As philosopher Richard Rorty observed in *Objectivity, Relativism, and Truth*, the pragmatist theory of truth (PTT) consists of “a farrago of inconsistent doctrines.” Nevertheless, according to a widely cited definition, PTT is the doctrine which maintains that true statements are defined as those which have utility (i.e., prove useful, allow for successful working). For example, in their *Advances in Relational Frame Theory*, K. Wilson and colleagues explained that, according to PTT, “a theory is deemed true to the extent that it organizes the behavior of scientists such that it allows them to reach the goals of their sciences.” Typically, proponents of PTT also endorse some version of *anti-realism*. As defined by Baum in *Understanding Behaviorism*, *realism* is the doctrine which “holds that there is a real world outside of us.” By contrast, as anti-realists, pragmatists “make no assumption” of there being a “real

world outside.”

The correspondence theory of truth. Like PTT, the correspondence theory of truth (CTT) also consists of a number of versions. However, according to a broadly accepted definition, CTT asserts that true statements are those which correspond to (mirror, portray, depict) *mind-independent* reality. In this context, the term *mind* does not refer to a nonphysical substance. Nonetheless, to avoid misunderstanding, the definition may be restated as follows: true statements are those which correspond to *absolute* reality. And correspondence with absolute reality yields absolute truth. But what is absolute reality? Proponents of CTT typically describe absolute reality’s defining features by making three principle claims about it. The first claim asserts that absolute reality is external and physical in nature, comprised of both commonplace objects (e.g., trees and cats), as well as the firmly-entrenched entities of science (e.g., atoms, black holes). The second claim asserts that absolute reality exists whether or not any entity (human or otherwise) perceives it, or otherwise interacts with it. These two claims constitute the doctrine commonly known as *realism*. The third claim is that reality has a determinate, intrinsic structure—a structure which it possesses prior to, and independent of, any descriptions of it by us. These three claims, taken together, comprise a version of realism which philosopher Hilary Putnam (and others) have called *metaphysical* realism. Give absolute reality’s nature—as specified by these three claims—we may further refine the definition of CTT. To wit, CTT maintains that true statements are those which correspond to absolute reality—a physical reality which exists independently of us, and which has a determinate, intrinsic nature. In other words, as the metaphysical realist’s bromide goes, true statements are those which “carve nature at its joints”.

What was Skinner’s View?

Skinner as a Proponent of the Pragmatic Theory of Truth. A number of behavior analysts have characterized Skinner (and, more broadly, radical behaviorism) as advocating PTT. Here are four examples. First, in *Behaviorism: A Conceptual Reconstruction*, G. E. Zuriff characterized Skinner as advocating a “pragmatic theory of truth” in which “a verbal response can be said to be ‘true’ only in the sense that it produces effective or successful behavior.” Second, W. Baum, in *Understanding Behaviorism*, opined that “modern, radical behaviorism is based on pragmatism.” As an adherent of philosophical pragmatism, the radical behaviorist (according to Baum) rejects the view that “there is some real behavior that goes on in the real world.” Thus, instead of asking which descriptions of behavior are truthful portrayals of real behavior, the radical behaviorist “asks only which way of describing the man’s behavior is most useful.”

As a third example, in *Conceptual Foundations of Radical Behaviorism*, J. Moore observed that “radical behaviorism embraces a pragmatic theory of truth.” As Moore explained, “a pragmatic theory is based on practical outcomes: The truth value of a statement is a function of how well the statement promotes effective, practical action.”

Elaborating, Moore noted that “from the perspective of radical behaviorism, matters of effective action . . . pertain to the degree that reinforcing consequences follow from the verbal behavior in question.” Finally, as a fourth example, in *Advances in Relational Frame Theory*, Kelly G. Wilson, Kerry Whiteman, and Michael Bordieri stated that Skinner’s “interest in verbal behavior is not whether or not it reflects reality.” Rather, “Skinner’s conclusion was that scientists use the term ‘true’ when their theories lead to effective action and ‘not true’ when and where they failed.”

What evidence did these behavior analysts offer in support of their assertion that radical behaviorism embraces PTT? To buttress his interpretation of Skinner, Zuriff cited the following passage from Chapter 18 of *VB*:

Empirical research . . . is a set of practices which are productive of useful behavior. . . . An important part of scientific practice is the evaluation of the probability that a verbal response is ‘right’ or ‘true’—that it may be acted upon successfully.

Similarly, Moore cited, from Chapter 18 of *VB*, Skinner’s assertion that “the extent to which the listener judges the response as true, valid, or correct is governed by the extent to which comparable responses by the same speaker have proved useful in the past.”

Passages from Skinner’s writings other than *VB* are also cited as evidence of Skinner’s pragmatist proclivities. For example, Zuriff, as well as Wilson and colleagues, cited Skinner’s assertion—appearing in *About Behaviorism* (hereafter *AB*)—that “Scientific knowledge . . . is a corpus of rules for effective action, and there is a special sense in which it could be ‘true’ if it yields the most effective action possible.” In a like manner, Jay Moore cited Skinner’s declaration—also appearing in *AB*—that “a proposition is ‘true’ to the extent that with its help the listener responds effectively to the situation it describes.”

Skinner as a Proponent of the Correspondence

Theory of Truth. Ample evidence exists that Skinner employed correspondence-based accounts of truth throughout his writings. Consider first what he said about reality. Skinner routinely distinguished between (a) the organism and (b) the reality with which the organism interacts. For instance, in his 1953 *Science and Human Behavior*, Skinner stated that “our ‘perception’ of the world—our ‘knowledge’ of it—is our *behavior* with respect to the world. It is not to be confused with the world itself” (emphasis in original). Likewise, in *VB* Skinner stated that our behavior is determined by “the environment . . . which . . . lies outside the behaving person.” In these (and other) passages, Skinner appeared to affirm an external, physical reality.

Next, consider what Skinner said regarding speaking the truth about reality. For instance, in *VB* Skinner explained that we deem a verbal response *true* “when the *correspondence* with a stimulating situation is sharply maintained” (emphasis added). Other examples from *VB* include Skinner’s statement that a speaker’s verbal responses “correspond to the ‘thing being talked about,’” for example, the announcement “*Dinner is ready!*

is characteristically reinforced only when it corresponds to a particular state of affairs.” Similarly, in his 1959 *Cumulative Record* Skinner discussed how to teach students “correspondences between words and the properties of objects,” and in his *AB* he noted that, in teaching a child to correctly name the colors, we “commend or correct him when his responses correspond or fail to correspond with the colors of the objects.” These and other passages argue for interpreting Skinner as a proponent of CTT, not PTT.

Recall that, according to PTT’s account of truth, true statements are defined as those which have utility. As part of Skinner’s approach to truth, he offered a correspondence-based account of the utility demonstrated by innumerable statements. For Skinner, many statements prove useful *because* they correspond with reality. Conversely, Skinner also observed that there are many other statements which also prove useful because they do *not* correspond with reality. Consider the following example (adapted from *VB*) of the type of statements which are useful because they correspond to reality. Suppose a speaker tells a listener that a given book has 400 pages. Given the book’s length, the listener may decide not to read it because it is too long. According to Skinner, in such a case the listener has “maximal confidence” that the speaker is telling the truth “if the speaker has looked at the last page in the book and found it numbered 400.” In other words, the speaker’s statement has utility for the listener if it corresponds to the actual state of affairs. As Skinner explained in *VB*, “when a speaker accurately reports, identifies, or describes a given state of affairs, he increases the likelihood that the listener will act successfully with respect to it.”

Now consider some examples of statements which have utility because they do *not* correspond to reality. Skinner offered several exemplars of lying in which the telling of a lie proves useful to the liar because it fails to comport with the facts. For instance, in *VB* Skinner offered the example of a child who says *I lost my penny* and, “as a result, a listener gives him a penny . . . when no penny has been lost.” Because the child’s assertion is not true—he did not lose his penny—his lie has utility in that he now has two pennies. Consider another example provided in *VB*. A suborned witness, in giving false testimony, “behaves verbally with respect to reinforcing contingencies established by the suborner.” If the suborner threatened the witness—e.g., threatened to harm the witness’s family if he refuses to lie—the lying has utility by allowing the witness to avoid or escape aversive consequences. Or perhaps, instead, the witness is paid a bribe for lying. Again, his lying has utility. Drawing on these (and other) examples culled from Skinner’s writings, a case can be made that Skinner advocated CTT. As Skinner observed, we deem a verbal response *false* when there is a “lack of customary *correspondence* between a verbal response and certain factual circumstances.” (emphasis added)

Resolving the Impasse. As the foregoing demonstrates, Skinner appeared to advocate two contradictory theories of truth (CTT vs. PTT). However, as I shall argue, there is no contradiction. Skinner did not advocate either theory of truth—so there can be no

contradiction—though he did employ elements of each in his own approach. Consider first a comparison of Skinner’s account to that of CTT’s. Like CTT, Skinner’s approach assumes that true statements correspond to reality. That said, Skinner and CTT part company over the *nature* of reality. While both advocate the doctrine of *realism*, proponents of CTT typically make an additional commitment to *metaphysical* realism; Skinner did not. Recall realism’s two major claims: (1) there exists an external, physical reality and (2) reality exists whether or not humans (or any other observers) are present. Both Skinner’s approach and CTT endorse these claims. However, as an exemplar of metaphysical realism, CTT adds a third major claim; namely, that true statements correspond to the determinate, intrinsic structure of reality. These three claims, taken together, purportedly describe the nature of absolute reality. Thus, further refining their version of correspondence-based truth, proponents of CTT maintain that a statement is *absolutely true* when it corresponds to absolute reality.

Skinner rejected CTT’s assertion of absolute truth. In *VB* he argued that “the truth of a statement of fact is limited by the sources of the behavior of the speaker There is no way in which a verbal description of a setting can be absolutely true.” In opposition to CTT, Skinner offered different conceptions of reality and truth. For Skinner, what counts as corresponding with reality can vary, depending on the established practices of a given verbal community. Different communities employ different taxonomies in making true statements. Furthermore, these various taxonomies are not reducible to some more fundamental taxonomy—one allegedly closer to capturing reality’s intrinsic nature. In short, no verbal community has a lock on the truth about reality—not even CTT’s favorite candidate, the scientific verbal community. As Skinner stated,

it is a mistake . . . to say that the world described by science is somehow or other closer to ‘what is really there,’ but it is also a mistake to say that the personal experience of artist, composer, or poet is closer to ‘what is really there.’ . . . the behaviors of both scientist and nonscientist are shaped by what is really there but in different ways.

By rejecting the claim that true statements are those which correspond to reality’s intrinsic nature, Skinner conceptualized the nature of reality as contingent, not absolute. So, in place of absolute reality, Skinner advocated what may be dubbed *contingent* reality. And in place of absolute truth, he advocated what may be dubbed *contingent* truth.

Finally, consider how Skinner’s account of truth compares with that of PTT’s. First, both approaches eschew truth as correspondence to absolute reality. However, Skinner rejected PTT’s further claim that true statements are defined as those which have utility. Recall that, in opposition to PTT, Skinner maintained that many statements have utility *because* they correspond to reality (albeit not absolute reality). To further elaborate, an

additional point needs to be made about the relationship, for Skinner, between truth and utility. He argued that whether or not a verbal response is deemed true “depends upon the properties selected for reinforcement by a verbal community.” Furthermore, which properties are selected depends on the verbal community’s goals (e.g., prediction and control/influence). True statements advance a community’s goals, thereby demonstrating their utility. Consider again the differing goals of scientists and nonscientists (e.g., poets). Skinner in *VB*:


The scientist makes one set of responses to a given state of affairs because of the reinforcing contingencies established by the scientific verbal community. The poet emits an entirely different set of responses to the same state of affairs because they are effective in other ways on other kinds of listeners or readers.

Which set of responses—the scientist’s or the poet’s—captures what is really there? The answer does not turn on whose responses correspond to intrinsic reality. Rather, for Skinner, “which behavior most closely matches the actual situation is a question . . . of the interests and practices of verbal communities.”

Concluding Comments

There are doubtless many behavior analysts who view the aforementioned debate about the nature of truth as, at best, a perplexing, peripheral issue. They are not alone. In *Truth and Progress*, philosopher Richard Rorty observed that, to non-philosophers, the debates over the nature of truth “are as baffling . . . as are those among theologians . . . who ask whether it is worse to be reincarnated as a hermaphrodite or as a beast.” While granting the obvious legitimacy of this view, I ask that those who hold it to reconsider. In an interview with Hank Schlinger in *VB News*, Schlinger opined:

I don’t think you can be a behavior analyst unless you understand its conceptual foundations. Behavior analysis has three branches: an experimental branch, a conceptual branch and . . . the applied branch. To be a trained behavior analyst, you need to have a pretty good understanding of all three. I feel that way about anyone that is certified as a behavior analyst. . . . I don’t think you can fully understand the principles and their application without understanding the conceptual foundations, especially in verbal behavior.

Without an understanding of our conceptual foundations, behavior analysis will likely fail to achieve broad consensus on the nature of truth, thereby threatening the coherence of radical behaviorism as a philosophy of science. In avoiding this threat, an exegesis of Skinner’s approach to truth is the appropriate place to start. 

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