

# Operants

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DOES THE LISTENER SHAPE THE SPEAKER'S  
BEHAVIOR OR DOES THE SPEAKER  
ALTER THE LISTENER'S BEHAVIOR?



THE ANSWER IS “YES”!



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Behavior analysis is founded on a scientific, deterministic approach to understanding the complex relationship between living beings and the environment. This approach originated well before the 20th century; however, it gathered momentum from the pioneering work of Pavlov, Watson, and Thorndike. Skinner's work, which spanned the better part of that century, integrated respondent and operant processes into a unique taxonomy that did not exist before that time, and this work continues to impact the field. How far we've come in making the field accessible beyond these originators, and how far we have to go!

Skinner's early experimental work gave rise to *Science and Human Behavior* in 1953 and to *Verbal Behavior* in 1957, both of which propelled scholars and practitioners to begin to forge the path to a more enlightened set of practices that can lead to (as the B. F. Foundation mission statement reads) "...a more humane world by replacing coercive techniques with positive procedures." This approach led to many applications derived from the science that help individuals lead a life consistent with their goals and with increased independence. It is important to realize that behaviorists continue to make discoveries and contributions in other areas as well. Discovery is at the heart of science, practice, and conceptual understanding, and discovering what is happening in the field more fully informs all of us. ○

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As always, the *Science Corner* has been translated in many languages. We would like to thank our volunteer translators for their effort. To read a translation please visit <https://community.bfskinner.org/s/operants-current-issue>.

Dear *Operants* Readers,

On September 16, 2023, the B. F. Skinner Foundation’s Board of Directors had its mid-year meeting. The Board reviewed many accomplishments and discussed future initiatives of the Foundation.

Some of our accomplishments in the past few months include the beginning of digitizing of our archival materials, the publication of two unique and well-received issues of the *Operants*, the progress of the online version of *The Analysis of Behavior* by Holland and Skinner, and a very successful summer fundraising event.

We are looking forward to sharing some future initiatives with you throughout the year. Please be on the lookout for the next event, an online *Skinner Session*. This continued education event will feature several prominent speakers who will discuss topics in our next book for the *Skinner for the 21st Century* series — *Reflections on Behaviorism and Society: Extended Edition*.




*Dr. Joyce C. Tu is a Board Certified Behavior Analyst with a doctorate in educational psychology from West Virginia University, specializing in applied behavior analysis (ABA). She has over twenty years’ experience as both a behavior analysis professor and a practitioner, teaching behavior analysis in universities and providing ABA services, training, workshops and supervision for parents and professionals working with individuals with developmental disabilities in the U.S. and abroad.*

*Dr. Tu’s specialization and research interests are chiefly in verbal behavior, specifically, joint control and its role in listeners’ behavior. She has authored several peer-reviewed publications and serves as a behavior analysis journal reviewer. Additionally, in 2011, Dr. Tu co-authored a Chinese-language textbook published by Peking University Press, including chapters on topics such as shaping, prompting/fading, chaining, and generalization. Over the past 20 years, Dr. Tu has held workshops and speaking engagements for national and international professional organizations.*

*Prior to becoming the President of the B. F. Skinner Foundation, Dr. Tu served as a Board member and a Vice President.*



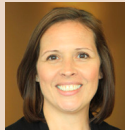
*B. F. Skinner’s Board of Directors meeting. Pictured, left-to-right:*

*Top: David C. Palmer, PhD, incoming Board member; Joyce C. Tu, Ed.D., BCBA-D, President; Vincent J. Carbone, BDBA-D, Board member; Francesca degli Espinosa, PhD, BCBA-D, Board member.*

*Middle: Julie S. Vargas, PhD, Chair, Archival Committee; David Roth, MA, Board member; Emaley McCulloch, M.Ed., BCBA, Secretary; Christy Evanko, BCBA, LBA, Treasurer.*

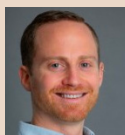
*Bottom: Konstantin Evdokimov, Director of Operations; Kristina Tillman, Board member; Darlene Crone-Todd, PhD, Board member.*

from the editor:



**Editor-in-Chief:**  
Alice Shillingsburg, PhD, BCBA-D

In his paper *The Behavior of the Listener*, Skinner suggests that, though he devoted relatively little discussion to listener behavior in *Verbal Behavior*, the importance of the listener shouldn't be dismissed. He makes his point regarding the importance of the listener in one simple statement: the listener is "responsible for the behavior of speakers." On the flip side, when discussing the autoclitic, Skinner said, "as you speak, you push the listener around by putting things in your speech so that this one will respond in ways which will be reinforcing to you." So, one might wonder, is it the listener that shapes speaker behavior or the speaker that alters listener behavior? The answer is a resounding "Yes"! In this issue of *Operants* magazine, I am delighted to see several contributions that emphasize the interplay between the speaker and listener. In a series of three articles, we see an exploration of the autoclitic, or what Thom Ratkos considers the strongest support against mentalism. Consistent themes in all three articles by contributors Ratkos, Andy Bondy, and Todd Owen, are the complexity of the autoclitic, the importance of the autoclitic, and the dearth of research on the autoclitic. Axe and Meleshkevich write more exclusively on listener responding, highlighting the role of the echoic. A special contribution to highlight in this issue comes from David Roth and Darcy Fernald Caldwell on the 30-year friendship between Dodge Fernald and Skinner and the serendipitous series of events that lead to this essay. You won't want to miss it. And back by popular demand from our Q1 issue on prominent women in behavior analysis, interviews with Stacie Bancroft, Executive Director of BABAT, Tyra Sellers, Chief Executive Officer of APBA, and H el ene Abdelnour, the driving force behind *Best of ABA - France*. Enjoy!



**Associate Editor:**  
Sydney Berkman, PhD, BCBA-D



**Managing Editor:**  
Konstantin Evdokimov, M.A.

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*We would like to thank those who contributed to this issue.*

*Operants preserves the intellectual tradition of Skinner’s writings — articles of interest to the field, but also written without heavy use of 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, 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 its theory — and make that available to the public.*

# AUTOCLITICS—THE TRUE BULWARK AGAINST MENTALISM

Thom Ratkos

When we refer to responses as their verbal operant classes, we do so with respect to Skinner's functional analysis. When we call something a mand, we have observed or can reasonably assume that it is reliably reinforced with a particular reinforcer, and its emission is a function of the relevant motivating operation. If we were teaching an English speaker Spanish and had them repeat "*me puedes dar un elote,*" we would be aghast if someone classified their response as a mand. "They've never even had an *elote!*" We'd cry. "They're clearly just repeating what I said, that's an echoic if I've ever seen one!" And we would be correct, of course. We could conceive of similar examples using the tact, intraverbal, and textual classes. Most behavior analysts are comfortable and fluent with these "basic" verbal operant classes. Few would say the same is true for the autoclitic. Our everyday treatment of the autoclitic is not always so rigorous, favoring topography over function and ignoring several complexities. That is, if we give the autoclitic any thought in the first place. In our literature, Petursdottir showed us that from 2005 to 2016, less than 3% of research on verbal behavior focused primarily on the autoclitic or grammar.

Some of the neglect of the autoclitic may come from its physical location in *Verbal Behavior*. By page 100, the mand, echoic, intraverbal, textual (including transcription and taking dictation), and tact classes have all already been covered. A great deal of applied work can be accomplished with the information in that first third of the book and the subsequent applied studies that it generated. Admittedly, the tact chapter continues another 46 pages, but when was the last time you heard a clinical reference to a metonymical or solecistic tact extension? Certainly, the subsection of "Verbal Behavior Under the Control of Private Stimuli" has not been ignored (thankfully), but as Skinner points out in a footnote, much of the analysis already appeared in *Science and Human Behavior* as well as the incomparable "Operational Analysis of Psychological Terms". We are all human, with all our competing contingencies and shortcomings, perhaps many of us just put the book down before finishing? Once in graduate school, a very prominent behavior analyst told me he thinks "no one" has read *Verbal Behavior* past Chapter 9. Something told me this was more admission than accurate condemnation, but a scary thought either way.

Skinner's introduction to the first of two chapters on the autoclitic summarizes all the previously described operants as having removed the speaker as a causal agent. It is only in the autoclitic, he states, that "we have not got rid of the speaker entirely." Here we see the potential for the speaker to "direct, organize, evaluate, select, and produce" verbal behavior, rather than environmental or motivative variables determining what is evoked. Skinner then makes the reader wrestle with (and hopefully ultimately reject!) the temptation to return to dualism. When verbal behavior is "manufactured," it is not by a special subdivision of the speaker. The variables responsible for this byzantine interplay between sources of control within and outside the skin must



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still come back to our empirically observed principles.

The importance of this conceptual and philosophical opening to Chapter 12 should not be ignored. The ultimate aim of an analysis of verbal behavior should be to convincingly demonstrate that this most human of human activity, speech and thought, can be explained by operant principles. The challenges to our approach are *not*, I would argue, satisfied by the observation or experimental analysis of the mand, tact, textual responses, the intraverbal, and least of all the echoic. The point of view of a committed mentalist (or just any person socialized in a deeply mentalistic verbal community, as we all are) is not threatened at all by the demonstration that a request for food is controlled by deprivation, nor that a child's "giraffe!" is controlled by the sight of a favorite animal at the zoo. Mentalism hangs on, confidently, in the composed, choreographed, grammatical aspects of our communication. I would hazard that many behavior analysts hold on to their own private mentalism here, too, comfortable with environmental control for small children or those with deficient repertoires, but harder to swallow for one's own thoughts and speech. Determinism for thee, but not for me!

If we hope to convince scholars, be they cognitive psychologists, linguists, etc. that all behavior is determined by environmental factors and can be explained by operant conditioning, it will only be by the thorough experimental analysis of all the layers of the autoclitic. Not to mention the possible reconciliation with the "Post-Skinnerians" who insist *Verbal Behavior* is not capable on its own of explaining how we think and learn about relationships between things, nor the behavioral consequences of the variety of effects Skinner's autoclitic frames have in a given speaker's repertoire. The depths of the autoclitic must be plumbed, but their complexity presents challenges.

But what is the function of an autoclitic? If you are looking for the comparatively straightforward antecedents and consequences of the other verbal classes (tact extensions not withstanding), you will be disappointed. Referring to 'a secondary response modifying a primary response' buries a mountain of complexity. First, we have to determine just what kind of autoclitic we're talking about. Skinner names many types, and even defines some of them, though in his own Skinnerian opaque-genius kind of way, gives many examples of topography but at the same time reminding us topography is irrelevant.

Within the autoclitic, there are many categories, with further complexity within those categories. The first is the descriptive autoclitic, which can be controlled by the source of the primary verbal response: "I heard \_\_\_\_\_," vs "I saw \_\_\_\_\_," and allows the listener to respond more precisely to the tact (or other operant) modified. Skinner also slips in "I remember \_\_\_\_\_," as an example, indicating that the stimulus controlling the primary response is no longer present, which in itself is worthy of significant analysis. Included in the descriptive autoclitic are modifiers controlled by the *strength* of the response, "I guess \_\_\_\_\_." Even within this subdivision of descriptive autoclitic there is still room for distinction; the weakness of the response could be due to "insufficient stimulation"

or "that the response has been poorly conditioned." The source of control, the intensity/clarity of the stimulus, or the response's relative fluency; all these functions are to be contained by "descriptive autoclitic." One question we should begin to wrestle with as a field is if the categories laid out by Skinner are sufficient to distinguish between their functions and the variables he has concluded affect them.

Negation and assertion, grouped by Skinner under the section Qualifying Autoclitics, are difficult to separate from the functions given to descriptive autoclitics, namely the strength of the response. If "I think it is raining" contains a descriptive autoclitic, why should we consider "it is not raining" to be something of a different sort? Skinner explains this particular example by way of an environment that contains some stimuli present that would evoke "it is raining" combined with some other variable which causes the speaker to reject the tact. Would spotting the nearby sprinkler not change the strength of the response "it is raining" in the abolishing direction? Could we so easily describe why "not" is qualifying rather than descriptive as we did in differentiating an echoic from a mand? I think not.

When introducing the 'basic' verbal operant classes, Skinner made use of figures, often diagramming exchanges between two people that denoted exactly what stimuli (generated by the other speaker or nonverbal) controlled the response. Examples of topography were used, certainly, but they never occurred with such frequency as they do in the autoclitic chapters. Diagrams and figures are also absent for the autoclitic; though they appeared with some regularity in presenting the mand, tact, echoic, and intraverbal. By the time we learn about autoclitics in earnest, starting on page 311, we haven't seen a proper figure since page 116, diagramming the various types of tact extension.

If you were tasked with determining if a particular response was primarily mand or tact, you could certainly propose some reasonable variables whose examination would shed light on the matter. But consider a response where the word "probably" was emitted alongside some other primary response, how would you determine if that was a descriptive or qualifying autoclitic (or neither)? Skinner provides that example and specifically says it could be either, though more often qualifying (p. 328). Does it help if you're given Skinner's next sentence: "the distinction is whether the effect on the listener is related to the speaker's inclination or to the properties of the stimuli responsible for the inclination"? Do you feel capable of separating out these functions? Why not?

While the broad definition of "...modifying a primary verbal response" is helpful, we should not neglect the fact that the primary verbal response *might be someone else's*. Tucked at the end of Chapter 12, Skinner gives the example of the single words "True," "maybe," and "no," as examples of autoclitics that modify what someone *else* has said. Additionally, we cannot forget that while verbal behavior is learned by contingencies set up by listeners, we become our *own* listener and can thereby benefit from autoclitic functions changing our response to our own verbal responses, another reminder of Skinner's

at the end of the autoclitic chapter. Skinner points us to Chapter 19 on Thinking for more, but it is important to note that appeals to the autoclitic are found all throughout the chapters on self-editing, self-strengthening, and logical and scientific verbal behavior. One could argue (and I am!) that Part IV and Part V of *Verbal Behavior* are completely reliant on the concept of the autoclitic. With so much of our understanding of complex verbal behavior relying on this concept, should we not be concerned about the relative dearth of empirical work supporting this part of Skinner's analysis?

We have experimental data from several skilled applied researchers that show teaching autoclitics (e.g., "is", "-ed" suffixes for past tense, "like a \_\_\_\_" to tact a not-quite-right figure) will then generalize to new stimuli and contexts that call for such a verbal response. However, there are some caveats we may be missing when we seek to teach autoclitics. A consideration for the size of an operant (i.e., length of utterance) is very relevant. We might call "cheese!" a mand and "I would like some cheese, please" as containing the same mand with autoclitics modifying it, but we need more information to classify either. Imagine that dad reinforces the one-word mand, but every time child responds similarly in the presence of mom, she engages in an echoic-to-mand transfer trial. "No no, say, 'I would like some cheese please.'" The child repeats and gets the cheese. Later the child approaches mom and says, "I would like some cheese, please" and mom smiles and acquiesces. This response has no autoclitic control at all, the size of the mand is the whole phrase. If the child continues to mand in the presence of dad with the single word, we could conclude some stimulus discrimination is occurring, or invoke the audience relation, but not any sort of autoclitic control. Function, not topography.

A similar problem that the autoclitic shares with tact extensions is that "standard forms" should not be considered autoclitic (or extensions). Skinner makes this point throughout *Verbal Behavior*, exemplified in the following quote:

...there are many intraverbal sequences which are responsible for responses in which an autoclitic function is very slight or lacking. Genuine negation is perhaps as rare as genuine metaphorical or metonymical extension. In particular, the affixes which serve an autoclitic function tend to become assimilated in standard forms." (p. 325, emphasis added)

The example of the polite request for cheese posing as a mand in an autoclitic frame has not been 'assimilated' per se, it has been taught first as a multi-word mand. In both cases, however, the answer is again to stay focused on function. Are the parts of a statement controlled by and change the effect of a primary response in some way? Or is it a phrase with mere intraverbal control, as it has been said and heard before, or a multi-word response which contains topographies that might also appear in autoclitics but have been learned together as some other operant?

Whether we are talking about mands or autoclitics, no one should doubt that using reinforcement for a

particular response under certain stimulus conditions would cause those stimuli to evoke that response in the future. With the various autoclitic subtypes, the relevant question is, "under what stimulus conditions are these responses differentially reinforced? How does our verbal community shape these particular responses in its members?" This question is relevant to all verbal operant classes, but with the autoclitic it takes on a special importance. The distinctions between the types of stimuli (or motivating operations) controlling the verbal operant classes are clear and universal enough that we should expect to see those same distinctions across very different verbal communities, including different languages. However, it is worth considering just how universal the distinctions between autoclitic subtypes are in the context of different modalities for verbal behavior (such as American Sign Language, or selection-based verbal behavior) and other languages.

If we follow that thread, the deeper we go into studying verbal behavior, what we may actually be studying is the broad, categorial reinforcing practices of a particular verbal community. Discovering the stimuli that control the response "I reckon \_\_\_\_," for example, may not so much tell us anything about what an autoclitic *is*, but tells us what kinds of responses are modelled and differentially reinforced or punished under some circumstances in one region, state, community, or even household. The similarly-ignored audience relation makes this exercise even more specific. We might have to reduce our conclusions down to the specificity of "this is what is evoked under these circumstances, with these people around, in this room." At what point in our endeavor have we ceased studying capital V-B "Verbal Behavior" and slid into studying the peculiarities of the prevailing differential reinforcement practices of a specific group of people within a specific language?

With all these complexity, ambiguity, and categorization woes building up, I hope the reader does not conclude the autoclitic "problem" is intractable. On the contrary, we cannot continue to ignore this critically important verbal operant class and must progress our understanding of it by way of experimental analysis. It is my opinion that the best approach would be to treat this endeavor as if caring for a recently starved person: with very small bites, building up their constitution for full meals once they have their strength back. The first problem to solve is that of categorization and the functional differences between these categories. Behavior analysis has always best harnessed its power from its inductive approach. It may be helpful to revisit Schlinger's 2013 "A Functional Analysis of Psychological Terms Redux" while keeping our focus on autoclitics and all its various subtypes. With the autoclitic, Skinner laid out a complicated web of functional relations—isolate one and observe behavior. With each experiment we can more concretely draw the borders between subtypes, or may find some need to be moved, erased, or created. With each demonstration of environmental control of more and more subtle (fundamental!) aspects of human communication, we can further and further close the "god of the gaps" presently comfortably-held by cognitive and linguistic approaches to thinking and language. ○

# THE AUTOCLITIC IS REALLY IMPORTANT

Andy Bondy



Andy Bondy, PhD, has almost 50 years of experience working with children and adults with ASD and related developmental issues. For more than a dozen years he served as the Director of a statewide public-school program for students with ASD. He and his wife, Lori Frost, pioneered the development of the Picture Exchange Communication System (PECS). He designed the Pyramid Approach to Education as a comprehensive combination of broad-spectrum behavior analysis and functional communication strategies. He is a co-founder of Pyramid Educational Consultants, Inc., an internationally based team of specialists with offices in 16 countries. Each team consists of specialists from many fields working together to promote the integration of the principles of applied behavior analysis within functional activities, including an emphasis on developing functional communication skills.

He currently serves as the Vice-Chair of the BOD for the Cambridge Center for Behavioral Studies. He was the recipient of the 2012 Society for the Advancement of Behavior Analysis (SABA) Award for International Dissemination of Behavior Analysis.

Understanding the autoclitic is a challenge. Perhaps, that is why Skinner devoted an entire chapter to it in *Verbal Behavior* only after the reader has taken a deep dive of over 300 prior pages. The elementary verbal operants involve variations in factors related to both antecedents and consequences. For example, the mand is not under the stimulus control of things in the environment, other than a listener, while echoics and intraverbals are under control of verbal stimuli. The tact is controlled by stimuli that are usually nonverbal and involve the entire physical environment. We tend to be comfortable when we are trying to identify specific stimuli, even verbal stimuli from other people but the autoclitic introduces a more refined element of control because it is based upon other verbal behavior of the speaker.

As with other primary verbal operant classes, Skinner created the word autoclitic. The root *auto* means self and the root *clitic* implies to lean (as derived from the Proto-Indo-European term *klei-*. Therefore, auto-clitic suggests leaning on itself- and confusion immediately sets in. I can lean on the wall, and I can lean upon my friend but how can I lean upon myself? A very difficult image. Furthermore, this relationship is different than when we engage in private intraverbals, as when we are both speaker and listener. For example, you meet someone you have not seen in a long time, and you say to yourself, “Don’t say anything about the purple hair! Just smile and say hello!” Talking to yourself in this manner may involve the use of autoclitics but is not an autoclitic *per se*.

The autoclitic informs the listener about conditions of the speaker. Consider a mand such as “I want a cookie.” A speaker may add specifications, such as big, red, or square, which are controlled by properties of the cookie. Now consider, “I really want a cookie.” Really does not pertain to the cookie or its features- essentially, there is no really-cookie as there is a big cookie, etc. Therefore, whether I say I want a cookie or I say I really want a cookie- I would end up with the same cookie. One question, then, is why use the word really? How would the listener respond differently? The listener would differentially reinforce the use of really by bringing the cookie to the speaker somewhat faster. The use of really in this case is controlled by motivational operations, which is a property of the speaker’s behavior rather than a property of the thing spoken about.

Skinner describes a wide array of descriptive autoclitics including those relating to properties of type, strength, and manner. Additional types involve autoclitics that function as, or influence, mands. Skinner extensively describes additional autoclitics that influence the tact, including numerous qualifying and quantifying autoclitics. Following the chapter on the autoclitic, Skinner provides a detailed account of grammar and syntax as autoclitic processes. Perhaps because I was never very good at learning the intricacies associated with grammar, syntax, and parsing sentences, I’ve found the functional aspects of autoclitics to be of greater use to clinicians, both within behavior



analysis and outside of our field.

Let's consider that seemingly simple word, *really*. I have no formal survey data, but I've asked the following question to audiences around the world, and you may consider your own answer as well. Do you know of someone with an ASD diagnosis who uses the word *really* appropriately? If an individual uses the word in virtually all mands- I really want a soda.... I really want to go outside.... I really want to hug you, etc., then such use is not differentially controlled by motivational factors. Most people have acknowledged that its appropriate use is rare for individuals with an ASD diagnosis. Next, I ask whether anyone has succeeded in teaching the appropriate use of *really* to such individuals. I've asked this for many years and have yet to learn of someone who has succeeded in teaching this lesson. Since some people have heard a few such individuals use the word appropriately but we have not taught the lesson, I suggest that these individuals have learned its proper use from interacting with peers or other people not engaging in formal teaching. Thus, we have two questions: Why is *really* a difficult word to learn by those with an ASD diagnosis and why do those engaged in formal teaching, including behavior analysts, find it difficult to teach?

While Skinner does not include a clinical section within the book *Verbal Behavior*, he does make some interesting statements that may serve as predictors. He notes that the contingencies associated with developing autoclitics are unlikely in the absence of social reinforcement. Note the use of *social reinforcement* in this sentence rather than Skinner's use of *educational associated* with the tact.

Skinner's comment may be viewed as anticipating the difficulty of autoclitic development for individuals not receiving or not strongly responding to social reinforcement. Individuals with ASD may be described as a population who are relatively insensitive to social reinforcement, especially when young. Thus, this statement can be viewed as predictive of observing individuals with ASD as demonstrating limited repertoires involving autoclitics.

A number of years ago, Lori Frost, a Speech Language Pathologist, and I analyzed the contents of systematic discussions with six individuals with ASD compared with six linguistically matched (using two standard broad language assessments) individuals with Down Syndrome and developmental delays (DD). Both groups were matched in terms of broad measures of language. An analysis of the content of 100 utterances was made regarding a set of descriptive, qualitative, and quantitative autoclitics as defined by Skinner. We did not analyze autoclitics in terms of syntax, grammar, or intonation. Both the total number of autoclitics as well as the diversity (i.e., the number of distinct responses within a response class) of autoclitics within a category were analyzed. We also looked at the discourse content of four typically developing children, though not randomly selected (our own children).” The children with DD used almost three times as many autoclitics compared with the learners with ASD. We also found that the individuals with ASD rarely used more than one autoclitic within a category. For example, under

the rubric good manners four of the six children with ASD used a single form while all children with DD used from two to five forms. The mean diversity for those with ASD was six, while for those with DD was 16 and for the typically developing children, a robust 56. This outcome supports the general observation that the conversational content of typically developing children is rich with autoclitics compared with individuals with verbal behavior delays. Furthermore, while the overall linguistic measure of those with DD matched that of the individuals with ASD, they used far more autoclitics in their conversational interactions than did those with ASD. In other words, traditional language assessments did not distinguish performance between these two groups while an analyses of autoclitic usage revealed clear differences.

To consider why teaching *really* is really challenging for teachers, consider how one might arrange this lesson for the root phrase *I want a drink*, which must be in the repertoire prior to teaching *I really want a drink*. The literature does not provide any clear examples. When challenged to create this lesson, many, including those trained in behavior analysis, describe modifying various materials. For example, ineffective lessons could involve offering a yummy milk shake, which would be associated with *I really want a drink/milkshake*, while offering a lukewarm cup of water, which would be associated with *I want a drink/water*. Or, varying the amount provided such that *I really want a drink* would result in a big cup of water while the mundane *I want a drink* would result in just a cupful. However, both strategies, and many similar ones, involve varying an aspect of the physical environment whereas the control of the autoclitic is under the control of motivational variables related to the strength of the response. Teachers tend to be familiar with strategies that involve manipulation of aspects of the environment but have difficulty in manipulating motivation in a direct fashion.

Here is a suggestion for how to vary motivation while keeping aspects of the environment relatively the same. First, increase the motivation for drinking by having the learner run around, especially in a hot environment, or offer salty foods freely, etc. At some point, the learner will approach and use the in-repertoire phrase *I want a drink*. Immediately model the use of *really* and upon its insertion into the phrase, provide a small amount of water. Do not attempt to satiate thirst in a single trial. Upon finishing the sip of water, the learner is likely to mand once more. If *really* is used, provide another sip but if the simpler form is used, model as before. It is likely that the learner will quickly use *really* in a series of requests. We can assume that as the learner sips more and more water, that thirst is gradually diminishing, but how can we observe this change? We cannot measure thirst in any direct fashion, but we may observe other co-variants, or to use Skinner's term collateral responses. As thirst diminishes, the learner is likely to reach more slowly for the offered cup and drink the water a little more slowly. As that change in behavior is observed, model *I want a drink* and reinforce its usage. Continue to observe the reaction to the offered cup of water, and at some point, it is likely that the learner rejects the offered cup. Now

it is appropriate to model an additional autoclitc, I do not want a drink. In this scenario, the learner has varied *I want a drink* to *I really want a drink* to *I do not want a drink*, even though the amount of water provided has remained the same. Of course, this scenario must be modified to introduce stimulus generalization factors to other settings and motivational operations as well as response generalizations to other response forms, such as *I'm desperate for a drink*, *Wow – could I use a drink*, etc.

Skinner is explicit in describing a large set of autoclitcs that do not relate to syntax or grammar, including actions such as raised eyebrows or changes in tone of voice. The arch look can be expanded to involve a wide array of what colloquially is termed body language. Many facial expressions, movements of the hands, arms, torso, etc. serve a variety of autoclitc functions. How far you position yourself relative to someone else may also serve autoclitc functions, with close proximity often associated with affection. We noted the difficulty many individuals with ASD have in acquiring appropriate vocal verbal autoclitcs but now consider if such individuals have skillful repertoires related to body language? It is not uncommon to see an individual with ASD, one who might even have a sophisticated language repertoire, who stands at a fixed distance to listeners regardless of the situation or the interpersonal relationship.

Skinner's comment about tone of voice is crucial when considering the development of spoken language. Tone of voice may be used to reflect strength of motivation, as by increasing one's loudness, or it may reflect general social rules, as when whispering in a library. For typically developing learners, modulations of intonation are acquired concurrently with content. That is, these children are modifying how they say words as they are learning what to say. Intonation within this group does not come after a substantial verbal repertoire has been acquired. This modulation is readily observed when typically developing speaking children use only one word/unit at a time – they have not begun to combine verbal units. A child may say *doggie* in a manner that is understood to be the equivalent to *I want the toy dog* versus saying *doggie* in a manner that is equivalent to *I see the dog sleeping*. While listeners may respond to contextual information to make this distinction, typically developing children modify intonation allowing the listener to respond to one as a mand and the other as a tact. Intonation is serving an autoclitc function that informs the listener as to the function of the spoken word *doggie*. The grammatical equivalents are acquired much later, *I want*, *I see*, etc., and are viewed by Skinner as autoclitc frames. However, intonation is serving the same function as the autoclitc frame for children using only single spoken words.

The protocol for the Picture Exchange Communication System (PECS) begins with teaching learners to use single pictures as mands or mand/tacts. The final phase of the PECS protocol is designed to promote tacts, wherein the maintaining consequences are educational/social in nature. Early in the PECS protocol, single pictures are associated with the mand function. However, later in the protocol the same picture may serve a tact function. The

question becomes, what can a picture-user do to indicate to the listener whether the picture is being used with a mand or a tact function? Essentially, a solution is needed that is equivalent to intonation for the single-word speaking child.



We noted in the first publication about the PECS protocol in 1994 that the introduction of the use of an icon *I-want* was equivalent to the use of intonation in speaking children and explicitly described its use as an autoclitc frame. The *I-want* was not described as promoting or reflecting rules of grammar or syntax. While it is true that typically developing children use such grammatical forms only after displaying repertoires of several hundred words, their use of intonational autoclitc frames accompanies some of their earliest utterances. The form of this autoclitc frame varies by language and other factors.

In summation, Skinner's description of the autoclitc involves many interesting facets of verbal behavior. The analysis relies upon a close examination of the conditions that influence these and other verbal operants. Individuals with ASD may have unique difficulty in acquiring and responding to autoclitcs because of the often-subtle social alterations that partially control such behavior. It may be advantageous for behavior analysts to share this type of analysis with teachers and speech/language pathologists as a demonstration of the benefits of our orientation. I look forward to increased research attention to issues related to autoclitcs and their acquisition. ○

# SOME THOUGHTS ON AUTISM, AUTOCLITICS, AND IMPEDIMENTS TO RESEARCH

Todd M. Owen

It will likely come as no surprise to readers that most individuals receiving ABA services carry an autism diagnosis. Despite the beneficial outcomes demonstrated by those who have participated in ABA therapy, the field has received criticism because our interventions can lead to rote responding which lacks the complexity and flexibility found in the wider verbal community. This criticism is not unfounded and can be especially pronounced for autistic individuals, a population that is characterized, in part, by rigid and repetitive behavior. To counter this, many practitioners and researchers have moved away from a reliance on discrete trials instruction toward more flexible and dynamic teaching methods. While this shift in procedures has proven to be favorable, I think rigid verbal responding could alternatively be categorized as a deficiency in the development of an autoclitic repertoire. Autoclitics are occasioned by environmental factors, the same as the other (primary) verbal operants, but function to modify primary verbal operants in some manner, and then are reinforced by a change in how a listener responds to those primary verbal operants. For example, consider the statements, “I see that it is raining,” “It is not raining,” and “I think it is raining.” Here, the tact *rain* is modified to communicate the strong, absent, or weak source of control, respectively, to the listener who then presumably responds in a differential manner given which statement is expressed (I will not delve into the autoclitic process controlling the suffix *-ing* here, but that is an interesting topic).

By Skinner’s formulation, autoclitics and the autoclitic process by which verbal behavior is selected and shaped are synonymous with grammar, although Skinner’s accounting deviates significantly from the traditional linguistic approach. The ability to effectively emit and respond to autoclitics is essential for most social interactions and becomes increasingly prevalent as one’s verbal repertoire advances. In various writings, Skinner asserted that autoclitics are a necessary and essential component of novel behavior. Upon encountering a novel event, an individual with an advanced verbal repertoire can recombine the various verbal elements that have been strengthened into a novel utterance. To accomplish such recombination, the speaker’s repertoire must include verbal elements that can modify other elements (i.e., autoclitics). In this way, an autoclitic repertoire may be the most important aspect of verbal behavior, for, as Skinner put it in his 1986 paper, *The Evolution of Verbal Behavior*, “the possibility of recombining the elements of vocal responses in this way accounts for much of the power and scope of verbal behavior.”

Novel, generative verbal behavior has increasingly become the goal of early intensive behavioral intervention (EIBI) programs serving autistic individuals. Yet, in my experience, only basic autoclitic forms are explicitly taught, such as prepositions, adjectives, assertion and negation, and simple grammatical frames (e.g., “The [noun] is [verb]-ing”). This is not to say that these forms are in any way unimportant or easy to teach! Many readers likely have experience with attempting to



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teach various autoclitic frames, only to have the learner emit a single frame in a rote and repetitive manner (e.g., “I want [Skittles, iPad, snacks, bubbles, etc.]”). Despite prompting more varied forms (e.g., “Can I \_\_\_?” “Let’s \_\_\_” or “Will you \_\_\_?”), it can be very difficult to evoke any other frame. I have also worked with learners who use a specific frame for each item or activity, in which case the frame no longer functions as an autoclitic but as a more complicated mand form.

Individuals with autism tend to display a propensity for engaging in restricted, invariable patterns of responding in comparison to neurotypical peers across a wide variety of activities (e.g., generating number sequences and various play tasks). While I am not aware of a study looking specifically at variability in verbal behavior, I think it is safe to assume that the tendency toward behavioral invariability extends to this domain as well. If true, restricted verbal behavior may arise from the same environmental factors that can give rise to other forms of invariability, such as variable responding coming into limited contact with reinforcement and having a higher response effort. Given an individual with autism’s tendency toward invariability, they may be unlikely to use a variety of frames when emitting mands, tacts, and intraverbal responses without explicit teaching and reinforcement. Several researchers have successfully increased verbal variability by implementing a lag schedule in which only responses that differ from a number of previous responses contact reinforcement. Using such a procedure across verbal operants and frames may result in the learners emitting a variety of autoclitic responses during social interactions, thus potentially increasing the reinforcing value of those interactions for the social partner, who may then, in turn, respond in a more reinforcing manner.

Despite the potential benefits of teaching autoclitics to autistic learners, the resources available to do so are scarce. Most basic, and a few advanced, autoclitic relations are described by Mark Sundberg in Levels 2 and 3 of the *Verbal Behavior Milestones Assessment and Placement Program* (VB-MAPP); and are likely a part of the treatment plans for many individuals receiving EIBI services. However, it is important to keep in mind that the VB-MAPP and other assessments are not intended to guide curricula, but rather to inform the assessors of the learner’s skills and areas for improvement. I have not encountered a program designed to teach the more complex autoclitic relations. In fact, it seems that an advanced autoclitic repertoire is presumed to have already developed in curricula that are designed for older autistic individuals, such as those used in social interaction programs. I suspect that this rift in basic and advanced autoclitic repertoires is due to a general lack of research on the topic. Autoclitics were introduced alongside the primary verbal operants in Skinner’s 1957 book *Verbal Behavior*, in which he dedicated three chapters to discussing autoclitic subtypes as well as the processes by which grammar, syntax, and composition arise. However, in the 66 years since publication, there have been few papers on the topic, a small handful of which focused on teaching autoclitics, with only a subset of those having included autistic participants. This seems

to be a concerning hole in our knowledge.

If we are to study autoclitics, we must first operationally define the target behavior. Unfortunately, some may find Skinner’s descriptions of autoclitics vague and notice overlap between the sub-categories. Take, for example, the phrases “I think it is a \_\_\_” and “It is kind of like a \_\_\_.” Weak stimulus control evokes both statements and either statement has a similar effect on the behavior of the listener, but the former was used as an example of a descriptive autoclitic while the latter was used as an example of a qualifying autoclitic. Several authors have attempted to address this issue by collapsing the original classifications into two subtypes: autoclitic mands and autoclitic tacts. Autoclitic mands direct the listener to respond in a specific way to the primary verbal operant while autoclitic tacts inform the listener of a nonverbal feature or controlling variable of the primary verbal operant. This re-categorization of autoclitic subtypes has intuitive appeal as well as distinct lines of delineation but has not received wide dissemination until Sundberg’s chapter on verbal behavior in the most recent edition of Cooper, Heron and Heward’s *Applied Behavior Analysis*. Perhaps researchers will be more apt to study autoclitics given these less ambiguous definitions, but we will have to wait and see.

Regardless of definitions, autoclitics are a difficult subject matter for research due to the often-covert sources of control over the operant. When designing a study to teach autoclitics, one needs to carefully consider the stimuli that will be included. For example, I recently conducted a study that focused on teaching children with autism to indicate weak control over a tact by emitting the autoclitic frame, “Like a \_\_\_.” In the second experiment of the study, we included animals and items that were likely to be unknown to the participants but resembled other stimuli that were likely to be known (notice my use of autoclitics in this sentence to qualify the tacts *known* and *unknown*). We pre-selected 64 stimuli, half which were presumably common and half which were presumably uncommon, to be included so that we could socially validate matched pairs of common and uncommon stimuli. While it would be possible to establish an inventory of tacts of animals and items for each participant, the task would be time consuming and require repeated social validation procedures. We selected uncommon stimuli that shared at least one visual attribute with a common stimulus, however, we could not ensure that this visual attribute (a) controlled the participant’s response or (b) would occasion the tact we intended. Thus, the criteria by which I determined a correct or incorrect response had to be relatively loose since the participants often provided surprising responses. For example, is the tact “person horse” a correct tact of a centaur, which is a mythical creature with the upper body of a human and the lower body and legs of a horse? Is the combined autoclitic and tact “Like an owl” a correct response to a Western Tarsier, which is a small primate with very large eyes? I decided that yes, both are correct even though I had anticipated responses that were quite different. Other forms of autoclitics are likely to be even more difficult to study in a rigorous way in that the occasioning stimuli are the speaker’s own

verbal behavior, much of which may be covert.

Once appropriate stimuli have been identified, researchers need to ensure that they are attending to the *function* of the autoclitics being studied and not simply the topography of the response. A key feature of autoclitics is that they affect how the listener responds in some way, either to increase the probability of reinforcement or reduce the probability of punishment. Consider the following frames: "I want candy," "Can I have candy?," and "Will you please give me candy?" Each of these ways of requesting candy would presumably result in the same response from the listener, either access to candy or not. While including the term "please" could plausibly increase one's odds of receiving candy, I would venture to guess that the difference is not much greater than simply pointing and saying, "candy." Given the invariable results, I would argue that these different frames are not truly *autoclitic* frames, even though Skinner himself tacted them as such. A more appropriate tact may be to reference the primary verbal operant the frame accompanies, such as mand frames, tact frames, and intraverbal frames unless the frame is likely to have altered the behavior of the listener in an observable way across occurrences. However, this may be conjecture on my part; I will leave it to the reader decide.

Stepping outside of the research typically conducted by behavior analysts, there are currently no studies on the developmental progression of autoclitics in a neurotypical population. While the VB-MAPP and other assessments place autoclitics as emerging within

the first 36 months, I have been unable to find studies to validate these claims. One observational study by Forde and colleagues in 2011, showed that the autistic children in their study emitted descriptive autoclitics at a lower average rate in comparison to age-matched peers. While informative of the differences between the two groups of children, this study is too small to draw large conclusions about the developmental trajectory of autoclitics (i.e., 9 pairs of children). Without normative information, it is difficult for practitioners to determine when intervention is necessary for an individual who does not demonstrate autoclitic behavior.

To better serve our clientele, especially those carrying an autism diagnosis, we need more information on how to teach autoclitics. As the key component in an advanced verbal behavior repertoire, it is surprising to me that we have gone so long with so few studies on the topic. By teaching our learners a progressively more complex autoclitic repertoire, those individuals will be able to increase the specificity of their mands, navigate subtle conversational changes, and appropriately respond to their peers, all of which may lead to more fulfilling and reciprocal social relationships. Designing studies will take creativity given the hurdles one may encounter when examining autoclitics. Translating those studies into effective curricula will be no easy task. But our field is blessed with many amazingly imaginative researchers and practitioners. This is my call to action for us to expand our focus outside of the primary verbal operants into the realm of autoclitics. ○

**breviis**

## ONLINE COURSE ON THE BEHAVIOR OF THE LISTENER



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If you want to learn more on the subject of verbal behavior, start with the course by Dr. David C. Palmer, *The Behavior of the Listener*. 1 Learning CEU. Learning objectives:

1. Participants will be able to describe an empirical demonstration that suggests that listener behavior commonly, if not always, entails covert echoic behavior.
2. Participants will be able to describe an empirical demonstration that reader behavior (and by extension, listener behavior) sometimes, if not always, entails covert behavior other than echoic behavior.
3. Participants will be able to describe an empirical demonstration that supports Skinner's claim that listeners commonly "speak along with the speaker" and sometimes ahead. ○

# “OH, THAT’S WHAT YOU SAID!”: BECOMING A BETTER LISTENER BY BECOMING A BETTER ECHOER

Judah B. Axe, Olga Meleshkevich

- Jaleesa: “Hey honey, can you go to the store and get milk, eggs, and cereal?”
- Andre: “Sure. Milk, eggs, and cereal. Got it!”
- Jaleesa: “Actually, sorry, we also need cucumbers, carrots, peppers, chicken, ground beef, lettuce, string cheese, chips, yogurt, soy sauce, peanut butter, and frozen waffles.”
- Andre: “Yikes! I’m going to need to write that down.”
- Jaleesa: “Ok!”

Why can Andre get the first three items without writing them down, but has to write down the second list? From a behavior analytic perspective, Andre will need to make a conditional discrimination, which we might refer to as an auditory-visual conditional discrimination or listener responding. In other words, to behave as a listener, he has to hear the auditory stimuli from Jaleesa, go to the store, look at the vast array of food items, and select (i.e., grab and purchase) the ones that match the auditory stimuli. When Andre gets to the store, it will have been a long time since Jaleesa asked for the favor, so we might ask: What stimuli evoke Andre’s selection responses? With the first list, Andre can repeat (echo) the three items on his way to the store, when he gets to the store, and as he’s scanning the arrays of items. When he’s in the dairy section, he scans the array of items and says, “Milk, milk, milk,” as self-echoics – that is, echoing his prior echo. When he sees the milk, he says, “Milk,” which is simultaneously a self-echoic and a tact of the milk. (Then he says, “Yes! I found one of the items!”) This process is referred to as “joint control” and was first studied by Barry Lowenkron. One thing to note is that all of Andre’s talking to himself might be out loud (overt) or “in his head” (covert). With the second list, this process does not work because Andre cannot readily repeat those 15 total items. So, he writes them down and brings the list – those textual stimuli evoke his selection responses.

Based on experiencing this phenomenon, seeing it in our clients, and reading the research literature, we hypothesize that the number of words a person can echo in a trial, or what we might call the “length of the echoic,” correlates with the number of items they can select (i.e.,

point to) when asked as a listener in a trial, or the “length of the listener response.” To further define these terms, a child has an “echoic length” of 4 if they can echo “car, shoe, hat, dog” (and not more words). A child has a “listener length” of 3 if they can see an array of pictures, hear “Point to book, cup, cat,” and point to those (and not more) pictures. A correlation of echoic length and listener length would have relevance for teaching verbal behavior to minimally verbal autistic children. For example, Milestone 14 in the Listener Responding section of the Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP) is following three-step instructions, such as “Get your coat, hang it up, and sit down.” If a child has an echoic length of 1, the child might have a difficult time following three-step instructions. On the other hand, a child with an echoic length of 3 might have a more successful time following three-step instructions.

## *Research on Echoics and Listener Responding*

In a 2013 study, Vincent Carbone and his colleagues addressed this skill with three autistic students, ages 6, 14, and 17. The researchers presented an array of 12 pictures on the table in front of the student and said, “Give me the A, B, and C,” where each letter was a randomly chosen picture. They used prompting and fading to have the students repeatedly echo (or for one student, sign) the three items, such as, “dog, shoe, cup, dog, shoe, cup, dog, shoe, cup,” before selecting the items from the array. This training resulted in an increase in correct responding to both trained and untrained three-item selection instructions. The researchers indicated that prior to the study, the students had difficulty echoing long strings of words, but they taught them to echo three-word utterances before seeing increased three-word selection responses.

So, perhaps the more words a child can echo in a trial, the more words they can respond to as a listener. We and our colleagues tested this hypothesis with 37 children diagnosed with autism, ages 4 to 15 years old, who functioned at least at the end of Level 1 in the VB-MAPP (around 18-24 months). They could echo many words as one-word echoics and select one item when asked from a six-picture array. We tested each child on echoing 1-, 2-, 3-, and 4-word echoics. After each response, we said, “Say it again,” to test the children’s self-echoic skills. We also tested each child on selecting 1, 2, 3, and 4 pictures from a six-picture array. We used the Pearson’s product-moment correlation test and found that the

correlation between the echoic and listener lengths was .62, which is a moderate to strong positive correlation. In other words, the children with short echoic lengths had short listener lengths, and the children with long echoic lengths had long listener lengths. There was a similar association between the echoic and self-echoic lengths. These results were further supported by a simple linear regression analysis.

### *Echoics in More Behavior Analytic Processes*

These results have implications for several research-based, behavior analytic processes. For example, consider a young child approaching a toy train, which the child has never seen, talked about, or heard of before; and an adult points to the train and says, "Get the train." In the Skinnerian analysis of bidirectional naming, the child covertly echoes "train," touches the train, and receives praise from the adult. This praise reinforces getting the train and saying "train" (albeit covertly) in the presence of the train. The next day, the adult points to the train, and the child says, "train." This seems surprising because the adult never taught the child to tact the train, but based on the covert echoic and praise, the adult did teach the child to tact the train.

A similar explanation has been offered in the procedure known as "instructive feedback." This is when an instructor is teaching a skill using a discrete trial, such as, "What animal gives us milk" – "cow" – "right!" Immediately following the praise statement, the instructor provides information that the child will be tested on later, such as, "A cow says moo." Studies have shown that children are later able to answer correctly to questions about

this "added" information, such as answering, "moo," to the question, "What does a cow say?" How does this happen? It may be that the child echoes the added information when it is delivered. In a final example, researchers have involved the echoic in teaching children to answer complex question sets, such as "Tell me an animal that's green," "Tell me an animal that's brown," "Tell me a food that's green," and "Tell me a food that's brown." Having a child echo the "key words" from the question, such as "animal green," has improved correct answers, presumably by ensuring the child is attending to both key words that control the correct response.

### *Conclusions*

In conclusion, increasing the number of words a child can echo in a trial may improve the child's listener repertoire. If a child cannot emit three-word echoics, they may have a difficult time following three-step instructions. Many ABA-based teaching programs build echoic skills, yet assessments such as the VB-MAPP focus on having students echo different words, and perhaps longer words; but programs rarely focus on building increasingly long strings of words, such as, "say cat, fox, bee, girl." When we think back to our early days of teaching children to follow three-step instructions, such as, "Go to the table, tap the table, and turn around," we might have been more successful by having the child repeatedly echo the instruction. This way, by the time they got to the table, they would have verbal stimuli present that would evoke the tapping and turning. This is critical, because as we learned from Henry Schlinger, listening is echoing. ○



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*Olga Meleshkevich received M.S. degrees in Clinical Psychology from Moscow State University of Lomonosov and Applied Behavior Analysis from Northeastern University. She's currently pursuing a PhD at Simmons University, and her topics of interest are joint/multiple control and the role of vocal imitation in verbal behavior development. Her accomplishments include a Student Poster Award at the 2018 BABAT conference, two publications in JABA and JEAB, and recent research demonstrating vocal imitation's strong predictive value on listener length. She also authored a Russian-language book on ABA. In addition to her academic pursuits, Olga runs her own company, providing teaching and consulting services to Russian-speaking families globally. She passionately advocates for ABA and promotes diversity, equity, and inclusion in her work.*

# STACIE BANCROFT: IT'S IMPORTANT TO LOVE WHAT YOU ARE LEADING OTHERS IN DOING

INTERVIEW BY WHITNEY TRAPP



*Stacie Bancroft, BCBA-D, LABA is the Executive Director of BABAT, the Professional Organization for Behavior Analysts in Massachusetts. She also owns the consulting firm, Growing Joy Consulting, LLC. She received her PhD in behavior analysis at Western New England University. In a prior role she served as a Program Director for The New England Center for Children. She has over 20 years of experience and expertise in applying behavior analysis to help children and families meet their goals toward improved quality of life. She has taught at multiple universities providing supervision to students and teaching Master's and PhD level courses on behavior, scientific method, and developmental disabilities including autism. She and her husband have the privilege of parenting three children who fill their hearts and home with laughter and love and give them the gift of seeing the wonder of the world through their eyes.*

*Tell us about your beginnings in ABA.*

I did my undergraduate work at Hamilton College in upstate New York, which is also B. F. Skinner's *alma mater*. I took a learning rat lab course with the late Dr. John Vaughn, and I really enjoyed that. I've always loved animals and I found out that they euthanized the rats when they were done with the classes. I was heartbroken about it because I had gotten really attached to my rat and had named him. Then they said that the rat that learned the most during the class would basically get a stay of execution because that student would be able to take it and present it to all the intro psych classes over the next two semesters. So, I went into the lab many nights very late, working with Templeton, and he ended up being by far the most skilled rat. We went on a circuit to the intro courses. He lived a long year and a half and had a good life.

*I love that story!*

That really got me into the learning lab pretty heavily. Then Vinnie Strully, the Founder of The New England Center for Children (NECC) who also attended Hamilton, came to the campus to personally recruit. Vinny spoke to me about ABA and NECC and the opportunities for graduate study and then my bags were packed. A few months later I headed out to Massachusetts. I earned my Masters in behavior analysis from Northeastern University studying under the late Dr. Myrna Libby. I got my PhD in Behavior Analysis from Western New England University studying under Dr. Rachel Thompson while working at NECC, where I stayed for 21 years. I just left this past August.

*I heard that you had just left NECC. I'm sure they were devastated to see you go.*

It was a crazy move because I didn't anticipate that I would ever really leave. It's an amazing place and I learned so much there but I developed some new interests and some new things that I got excited about, and dropped everything to go pursue them, so here we are.

*I think that it's really great for readers to hear that even after you have this established career and you've probably really built a family with this organization, that you can still get excited about something new and be passionate enough to uproot your life, branch out, and try new things. So how did you get interested in leadership?*

I always gravitated toward leadership positions in one way or another. I get involved with things that I feel are important or interesting, and I find a lot of things important and interesting. I tend to dive in deep once I start to pursue something and access as many of the associated reinforcers as I can. From there I think it has one of three outcomes:

1. If I don't access adequate reinforcers relative to other things, I no longer pursue it and that's not always a good thing. Sometimes



that's to my own disappointment, right? I've given learning the guitar a shot more times than I can count, and it just hasn't taken. I'm not giving up. Someday, maybe...

2. If I do access adequate reinforcers, I might pursue something to the point of it becoming an interest or a hobby. For me, interests might include making pottery or gardening. I enjoy them, but for various reasons, I've not allocated sufficient focus to become skilled and passionate to the point of teaching and inspiring others to do pottery or gardening.

3. For other things such as areas of behavior analysis, leisure, parenting, helping to create a strong professional community, I've developed passion and skill. I'm still always learning more about my passions, but once I'm skilled enough to inspire and guide others to find associative reinforcers, I'll lead where I can. I think it feels good to help others find reinforcement in things that I find reinforcing. So, I think it's less about seeking leadership for the sake of leadership and more about if I invest in something...and am passionate about something...and have developed enough skill in something...to find opportunity to help others find reinforcers in that something. I think that's how I've been led to leadership again and again.

*I really like the way that you explained that, and I like the different tiers here because I think sometimes when we talk about developing new skills it's kind of like you're either at #3 (being skilled enough to inspire and guide others to find associated reinforcers) or we don't discuss it at all. What have you done, or what's helped you to identify what falls into each of these categories? I feel like that's a skill in and of itself, right?*

Well, I think that the last thing you want to do is get yourself into a situation where you're leading in an area that you are not skilled enough in or are not passionate enough about, right? If you don't deeply care about what you're leading people in, then that's going to show.

You can contact things without being a leader in everything that you do, but the things that you are truly passionate about and really do a deep dive and learn and become capable in, then I think the opportunities present themselves for you to lead others in those areas.

*What do you say to the young professional who is capable, particularly by the standards of those in their community, but not passionate about something and they're being encouraged to step into a leadership role in that arena?*

I do think that it's important to love what you are leading others in doing. So, I have been in leadership positions where I haven't been as passionate about it, and I wasn't a good leader. That being said, you can grow in your appreciation for something over time. But I think if you have sustained periods where you're not passionate

about what you're doing, it's really tough to be able to be an effective leader for other people. Essentially what you're trying to do is allow them to access those reinforcers and how are you going to do that if you're not accessing them yourself?

*Were there any mentors that supported your development and transition into leadership?*

So many! Dr. Myrna Libby, Dr. Bill Ahearn, Dr. Jason Bourret, Julie Weiss, and Dr. Rick Graff, all helped me grow into different leadership roles at NECC. Dr. Joe Riccardi and Liz Martineau from BABAT...really everyone I've had the opportunity to work with on the BABAT Board. I would be remiss to not mention my husband, who is my biggest support, but also has had endless conversations with me over the years about leadership and we really value each other's feedback. We run everything off of each other and he's always been a huge person to have in my corner when I take on a new leadership role. Dr. Rachel Thompson, my doctoral advisor, played a huge part in who I have become as a leader. She's someone that I have a lot of respect for and continue to gain a lot of insight from every time I have the opportunity to speak with her. She's just one of those people. You know you have those people, it's probably Alice for you, every time you talk to them, you're like "Okay, I'm walking away with some very important information here." Even if they think they're just kind of casually talking to you.

I think it's important to find a connection with various mentors and to have people in your life that you walk away from saying, "Oh my god. Okay, I have to write down everything that this person just said because I never thought of it that way."

For instance, I had a conversation with Rachel Thompson immediately preceding the start of my new consulting business and some of the things she said have really strongly influenced my approach to service delivery.

I also consider people I've supervised to have been mentors for me. I had the opportunity to work with some amazing people over the years at NECC and some other places, and I've just learned a great deal from them. I've have sharpened and grown many skills from watching and learning from people that I've supervised. It's a two-way street!

*Was Women in Leadership a topic that you discussed with mentors?*

Dr. Greg Hanley was one of my professors in my graduate program. I remember one time when he specifically talked to my cohort about women who were incredible role models in either speaking or writing, so that we could focus on women that were doing really great work in a number of different areas. That was probably the beginning of my adoration of Carol Pilgrim. Rachel Thompson would discuss Women in Leadership from a different angle. One time she held a practicum that was focused on the unique challenges of women in leadership and how you approach finding balance in your life. I

remember that so well, I think about it all the time. It's shaped a lot of the ways that I approach balancing my life and my profession and career.

***Is women leadership a topic you discuss with your mentees?***

Yes, absolutely. I want to help connect people I influence with women in leadership within our field. I also try to have very honest conversations with mentees about challenges for women in leadership and how to overcome those challenges.

***What have been some obstacles along your professional career?***

I remember finding it challenging to transition from an eager graduate student who is trying to say "yes" to any opportunity that came my way, which is good, and you WANT to do that, but to then transition from that to a professional who can say "no" and carefully select the projects that her time should be allocated to. That's still a tough one, but I've improved drastically.

***I'm just so afraid that an opportunity may not come around again.***

I remember one time someone said to me, "Anytime anyone, under any circumstance, asks you, from any journal, to do a review, you say yes, and you get it done on time." That was good advice because I was a doctoral student, and I was trying to get my name out there and develop my career. It was almost a decade after I graduated, before I first said no to a review. At first that it felt wrong or lazy to say "no" and I had to tell myself, "Okay, that was advice that was given to me as a doctoral student. It doesn't apply anymore, Stacie!" So, I think that that's a topic that I would like to see more people discuss when they're in their doctoral training, "How do you prepare for that transition and how do you not end up in a situation where you are completely burned-out years after you graduate because you're still saying yes to absolutely everything that comes across your desk?"

Another obstacle is that sometimes it's been hard to act quickly when my passion would wane and to promptly recognize it and act. I don't know any behavior analysts who haven't expressed some burnout or less excitement than maybe they started off with in their career as a practitioner, as a researcher, or as a teacher. I think you have to recognize when that your interest is waning and you have to reconnect with reinforcers, and that's an important process. Ask yourself, what do I still love about this? What's driving me? How do I get excited about this stuff? Do I need to go to a conference to get inspired? Do I need to get more involved with my professional organization to connect with more people and be more entrenched in this, because right now I'm living on the surface and it's not making me happy. I think it's really important to recognize when that happens and to reconnect with the reinforcers or change course if the things that used to be reinforcers are no longer reinforcers for you. Everyone's going to have a down day, but I'm talking when it's sustained, right? I find it

alarming how easy it is to just slip into existing or living in burnout. Life's a quick ride. Who has time for that? I think that is a professional skill that is very important to develop because I think you learn in graduate school to work and push through, and that's great for graduate school when you're trying to expand your growth and your learning, but that's not how most people would live happily throughout their profession and their life, and you have to be able to recognize when you've burned out a bit and change that.

***This might be my favorite response so far. This is such a huge topic, not just in our field, but around the world right now! It is nice that you are giving that young professional, who doesn't know what to do, a permission to seek other alternatives, and that it doesn't have to mean leaving the field completely. There are other options out there.***

It's so important to check in with yourself and see, "Am I really enjoying this?" or "Is this hard work leading me to something that I will really enjoy?" And sometimes it's just some little tweaks. Maybe you have veered too far into administrative tasks and have gotten away from the practice that you really love. Well, how do you get yourself back over to spending more time doing the stuff that you really love? I think that's something you have to do periodically and if it means at the end of the day that you need to change course in a more drastic way, you're going to be okay. I've supervised a lot of people over the years and a common theme that I've seen is young professionals feeling that there's only one path and being terrified to veer from that path because it's either this path or it's nothing, and that's just not true. It's just not true, and it's just a level of stress and anxiety that you don't need to carry with you.

***As a leader, what are some of the things that are harder for you and how do you overcome those?***

Lots of things are hard. As a leader, you have to make decisions that are not in the manual. You have to incur risk. That's what you're doing, right? You're incurring risk, which means you have to become skilled at assessing risk and acting prudently. In some cases, the decisions you make can impact a lot of lives, either positively or negatively, and it can cause a sense of stage fright at times. This is really common with people when they're first starting in their careers but, like anything, you *practice* making big decisions and the stage fright eases. When the stage fright pops back up you do your research, you consult others who are more skilled when appropriate, and you remind yourself that you are educated, experienced, and qualified to make this decision. You recognize that in most cases it will be the right decision, and when it isn't the right decision, you recognize that you made the best decision you could at the time. You learn from it and most importantly, you give yourself grace. It's important to recognize the areas that are not your strengths and to either dedicate time to improvement or arrange systems that outsource those skills. You don't have to be great at everything to be a leader. You just don't. No one is, but you have to make

sure all the boxes are checked by you or someone else. So, you do have to be good at recognizing your own weaknesses and using resources creatively to make up for that.

*What advice can you give to up-and-coming professionals looking to develop leadership skills or move into leadership positions?*

A few points here. One, find a mentor or peer that will help guide you. Seek support. That could be an academic advisor, or it might be someone else. Sometimes it's best to seek mentors out. What I think people don't realize in early career enough is that, from my experience, I've found that people later in their career are always extremely open to having a mentoring relationship with new professionals. I'm pretty sure if you just picked a behavior analyst that inspired you and you were excited about talking to and said, "Hey, can I touch base with you? Can we have a conversation?", that you would get a positive response and that the opportunity for continued contact would be in most cases. That's something we talk about at BABAT, wanting to create connections between more experienced, senior people in the field and more junior people in the field and make sure that there's benefit happening in both directions there.

*What strategies do you use to calm nerves when making big decisions?*

I love this one! That's a great question. Thinking back to what I said earlier, when nerves are high, assess why your nerves are high. It's often a case of elevated risk in a decision that you're making, right? So, I start by taking the time, whether it be a day or a minute, to assess

1. What I think could go wrong related to this decision. What is it that I'm actually scared of here?
2. How likely is it that a negative outcome is likely to happen? Am I really going to get up and do this big talk in front of 1500 people and people are going to throw tomatoes at me? Probably not.
3. Whatever I'm scared of happening, how do I make that less likely to happen?
4. What if it still happens?

For example, maybe I have to help launch a new event and I'm nervous. *What could go wrong?* Maybe I don't get enough attendees and it ends up being a big financial loss. *How likely is that to happen?* Well, events like this have been successful historically, but there have been factors associated with COVID that have made success less likely. So maybe it's like a 60% chance of success. Okay, how do I make a low attendance less likely to happen? Well, I'll need a focused marketing approach. *In the end, what if the event does fail?* Well, the financial risk is not so high that failure will be catastrophic, and people will understand. If it fails, future initiatives need to be reassessed. Are we going to do an event like this in the future? Are we going to change it around completely, or are we going to try something different since it didn't work this time?

So, I think going through that process is what can really calm your nerves because you're getting rid of the risk. You're getting rid of the fear. I also like to approach my biggest decisions with a cool head. I am a big fan of walking away from it, if possible, get some exercise, eat a meal, laughing with a friend, reorganizing a closet, and then taking a fresh look.

*What are some things that organizations should be doing to support women in leadership? Do you see missed opportunities in the field?*

Okay, I have a bit of a soapbox for this one.

*I am nestled in the audience. I can't wait.*

All right. Like it or not, women are more likely than men to have greater responsibility for caring for others. Realistically, we're living in a world where a lot of that stuff still falls on women, and that's just the truth. We're not to a point yet where it's completely equal. So, living in that reality, it impacts a lot of women's careers. Women are also far less likely than men to negotiate their terms, to ask for raises, to ask for flexibility or to seek promotion. I have three kids. I have an eight-year-old boy, a seven-year-old boy, and a one-year-old daughter, and it's opened my eyes. I have been fortunate to have received good support, but a lot of people do not have good support and I'm deeply concerned about what unrealistic expectations in work is doing to families. My greatest concerns are around working parents, particularly mothers. They're not okay. I can't tell you how many women have come to me over the years, absolutely confused as to how they could possibly have a family and also pursue their professional goals. This has happened more times than I can count. Working parents are too often being forced to sacrifice their family or sacrifice their career, and this falls hardest on women.

There was an article in the *Atlantic* not too long ago. It quoted a working father that was saying, when my child is sick and I have to stay home with my child, I tell my company that I'm sick because it'll be looked on less negatively than if I tell them I'm staying home with a sick child. So here he's having to lie. That's awful. It's awful.

Organizations need to recognize that working parents are 1/3 of our workforce, in our field, the number is often much higher. Poor lactation rooms, inflexible post-parental leave schedules. - That one's a big one for me. We're doing better with not considering parental leave as a "vacation" but then the parent comes back to work, and it's like, "All right, welcome back. How's that baby? Are you getting any sleep? Okay, here's 15 million things to do, and we're going to have this meeting tomorrow. And this meeting..." and it's too much. It's too much. People need to ease in. They still have a newborn at home they are up with all night long and their life has just dramatically changed.-Lack of flexibility in what work can be done from home at 5:00 AM or 9:00 PM is another area in which we fall short for working parents. COVID has really propelled the entire workforce forward a lot in that respect, but there's still a lot of unnecessary inflexibility with that stuff. Lack of parenting support,

lack of recognition of the sometimes extreme conditions under which 1/3 of our workforce is operating under, and just generally forcing people who are providing care to children or parents to pretend as if they are not doing so. I think that's detrimental to everyone involved. As a society, we tried the approach of come to work and leave your problems at the door, and it doesn't work with today's workforce. We need to not only ensure that parents are supported in times of challenge, but that they are also supported and feeling fulfilled as parents. A mother that is upset about only seeing her child for a couple of hours most days, much of which is spent prepping for childcare that eats up most of her pay, is not going to perform her best at work. A mother who's dreading the next time her child is sick because of how it will look if she takes another day for care is not performing her best at work. A mother pumping in her car because she doesn't have a comfortable place to pump is not going to perform her best at work. A mother crying in the bathroom because her teenager is struggling, and she hasn't felt able to support him is not going to perform her best at work. Working parents need some attention and there's absolutely no reason why someone cannot be an effective employee, effective leader, and an effective caregiver; but it requires support and understanding at the organizational level. So that's my most recent soap box and you just gave me an opportunity to burst through the seams about it.

*I really appreciate it. I have a sister, and my niece is just one-and-a-half. These are some of the topics that my sister talks about regularly and I can empathize with her, but I'm not in her situation. So, there are things that are in the forefront of my mind because I talked to my sister, but then there are several things you mentioned here, like the post-parental leave schedules. That's something I've never thought about. The conversation about when people return, that's not a conversation I'm familiar with.*

It's not a conversation people are having. Some of this I'd like to think that I empathized with as much as I could before I had children myself and care taking responsibilities, but I really did not get it all because I had to kind of experience it myself, right?

But you can speak up if it's not working for you, and young professionals should be encouraged and parents that are new should be encouraged to say, "This is not working for me, and I need a different situation here." I think working parents are so scared that they're already being seen as having too much diverted attention, so they don't want to speak up and say something else that puts more of a spotlight on their needs. So, it's kind of a bad situation. It perpetuates an environment where they're not being supported adequately.

*I really appreciate this conversation. I liked your soapbox.*

Thanks! I'm good now.

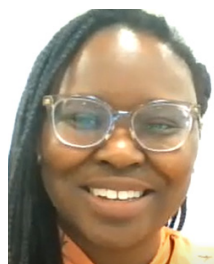
### **What are your goals as the leader of BABAT?**

I'm big on community and want all Massachusetts behavior analysts to feel that they have a home in BABAT, a place where they can access needed resources, find ways to learn and grow and inspire each other, advocate for each other, and connect with each other. I work with the BABAT Board of Directors, including our amazing BABAT President, Dr. Jill Harper, to further grow, develop and strengthen a community for all of us. I believe in the good of our applied science, and I routinely find behavior analysts to be amongst the best people I know. I believe that we are at our strongest when we are connected together and those are really the guiding thoughts for everything that we do with BABAT. Everything boils down to community. Anytime you do anything in any area of your life to strengthen community, I find that to be just a very satisfying endeavor.

### **Do you have any initiatives to support women in leadership positions?**

Through BABAT, we ensure that women are provided opportunities for invitations, recognition, board positions, and provided platforms to share their work. Equity and opportunity are really important for us and something that we are continually working to improve. In my consulting company, Growing Joy Consulting LLC, we are taking on new consultants and strategically crafting a workplace that lifts up women and provides a supportive and flexible environment for women to meet their professional and personal goals. At the personal scale I do my very best to support other women, period. We have enough of an uphill battle. The last thing we need is infighting or pushing other women down. My personal goal is to keep growing in celebrating, encouraging, and motivating other women to rise and live in happiness. ○

### **ABOUT THE INTERVIEWER**



Whitney Trapp is a doctoral student at the University of Nebraska Medical Center's Munroe-Meyer Institute (MMI), studying under the advisement of Dr. Alice Shillingsburg. She obtained her master's degree in educational psychology with a concentration in applied behavior analysis from Georgia State University. Whitney is currently a BCBA in the B.R.I.D.G.E program at MMI, where she works with learners transitioning from 1:1 intervention models to less restrictive environments. As a BCBA, Whitney has worked on increasing social and language skills with early learners and challenging behavior reduction with adolescent and adult learners. Her research interests include staff training, social skills, applied verbal behavior, and diversity, equity, and inclusion in behavior analysis.

# TYRA SELLERS: DIVERSITY BREEDS CREATIVITY

INTERVIEW BY CASEY CLAY

*First question, please tell us how you got started in ABA.*

Well, it's not a very exciting story but essentially, as a teenager I always volunteered to work with folks that have special needs and I got a job as a teenager doing respite care in people's homes and then working in group homes. And then, I started working for a non-public school in California in the Bay Area called Spectrum Center, which was a behavior analytic school for folks—that for whatever reason most often had severe problem behavior—who couldn't be served in their home or school setting. So, I started working there in 1992 and I worked there for about nine years. Honestly, I didn't think of it as a career for me at that point. My undergrad area of study, my major, was psychology at first but I didn't really make the link because where I went to school, behavior analysis wasn't a thing in the academic offerings. This was pre-insurance for a services; pre-Autism Speaks and that sort of thing. So, I really didn't really think of it as a career option. I switched from psychology to philosophy, and then I went to law school all the while working at Spectrum Center and some group homes. I realized when I was in law school that I didn't want to be a lawyer, but I finished my law degree and then immediately enrolled in a master's program in speech language pathology. My husband was a little bit like "seriously, you can't just be a serial student and you don't even know for sure if you want to be a speech therapist. You should really think about this." So, I finished one or two quarters and then I put things on pause. That was around when things were becoming a little bit more mainstream for behavior analysis as a profession. So, I ended up eventually getting my master's and I got certified. I got certified before the behavior analysis certification board was a thing. Florida had a certification process and certain states would contract with Florida. So, I had my bachelors which meant I qualified to be a CABA, certified associate behavior analyst. Then I could transfer it or convert it once the BACB came into existence. So, I became a BCBA. I just didn't realize that this was the career for me even though it was there all along. Eventually I leaned in and accepted my fate.

*It seems like I've heard of several stories where folks get involved in human services and you find out that you just love it. So, what were some of your early leadership roles?*

At Spectrum Center I moved up. I started out as a direct technician then I became a behavior specialist, which it's not really a leadership role, but they had advanced responsibilities back in the day around ensuring your paper pencil data got collected and graphed and that sort of stuff. Then I think I was an assistant teacher and then similar to a SPED teacher in one of the classrooms. So that was probably the first leadership role that I held in our profession. Then from there I became an administrator—what people may now call a clinical director, or a senior clinician and became responsible for other people doing the things. Those were my early roles at Spectrum Center.



*Tyra P. Sellers is the CEO of the Association of Professional Behavior Analysts (APBA). She earned a B.A. in Philosophy and M.A. in Special Education from San Francisco State University, a J.D. from the University of San Francisco, a PhD from Utah State University, and is a Board Certified Behavior Analyst. Her professional and research interests focus on professional ethics, training and supervision, assessment and treatment of severe problem behavior, and variability. Dr. Sellers has over 20 years of clinical experience working with individuals with disabilities in a wide variety of settings. She has held positions as an Assistant Professor at Utah State University and as the Director of Ethics at the Behavior Analyst Certification Board. She has published several journal articles, co-authored four book chapters, co-authored the book titled Building and Sustaining Meaningful and Effective Relationships As A Supervisor and Mentor and the workbook pair titled The New Supervisor Workbook and The Consulting Supervisor's Workbook. She currently serves on the editorial boards for several peer-reviewed journals.*

*You can see the skills you build in beginning leadership roles when you're under pressure and how that might shape where you start as a leader.*

Tyra: Yeah, I will say some of these leadership roles came to me like: “you are really good at this now and, so, you should be the leader” and I don’t know that I necessarily had leadership skill. That’s different. To be in one position, but then to move into the next level up often requires a different skill set, and I don’t think I had those skill sets necessarily before moving into leadership roles. I think I was susceptible to having my behavior shaped in positive ways, which I’m really grateful for. I’m grateful for folks who were willing to help shape my behavior because I was not fully baked at all. (laughs).

*That leads into my next question. How did you get interested in leadership, and were there any mentors that supported that development in leadership positions?*

I don’t know that back then I was necessarily interested in being a leader or a supervisor, but I think if you were someone that is drawn to this work, which many of us are, that is, to be a part of something bigger than yourself and to be able to collaborate with folks and create positive change in the world, then it makes sense that you want that for clients and you also want that for your staff. So, I think that was a draw—that maybe I can help with systems that make it easier for staff to do their jobs or allow them to do their jobs more efficiently or effectively or at least enjoy their job more. I don’t think I got purposefully interested in supervisory practices until much later in my career when it became abundantly clear that there wasn’t enough instruction. There weren’t enough supervision resources for people to engage with. So, that came much later in my career—probably after making a lot of mistakes in my leadership goals and then trying to be more purposeful. In terms of the mentors, my direct supervisors were not the people that I would have viewed as mentors. Many of the people that were assigned to be my direct supervisor were not necessarily exemplary. Many of them were coercive or absent or checked out, but I was lucky enough to have adjacent people who were peers, but were more skilled, or who were in a higher position but not my supervisor. These people, for whatever reason, ingratiated myself to them and that made them somehow want to give up their time. At Spectrum Center two people that really come to mind are Nikarre Redcoff, who was a higher up and was never my direct supervisor, but was always open to hear my woes, but then also would say things like “well if it’s a problem, and you’re one of the variables, then there is probably something you can do about it.” And then, Ronnie Dietrich, who was someone who worked in an entirely different division than I did but did a lot of professional development and I would nominate myself for any opportunity interact with him. They were my earlier mentors. (laughs) They probably don’t even know that they were my mentors, but that’s how I viewed them.

*Mentors like that are great—to be open and to share what they know and help you grow in behavior analysis. So yeah, did you ever talk to either one of them about women in leadership? Did that come up as*

*a general topic or more specifically how you would go into leadership?*

No, honestly, I never considered that topic. I think probably Dr. Sarah Bloom was the first person that I ever had a conversation with about that and it was more related to women in academia. I think there’s much more space now to talk about “fill-in-the-blank in behavior analysis right now” whether it’s being a person with a disability and a behavior analyst, or black in behavior analysis, or a woman or transhuman in behavior analysis, which is great. But when I was coming up there wasn’t a lot of talk about that really to be quite honest with you.

*It is interesting that you first talked to Dr. Sarah Bloom, as a peer and colleague about that. That’s of course an important issue and now as you mentioned there is more space to have these discussions in our field. I’m glad it’s going in that direction. I’m wondering if you could speak to obstacles related to gender or being a woman in leadership?*

That is such a good question. I’ve been on panels at WIBA and I’ve had the benefit of watching other incredible behavior analysts talk about questions related to obstacles that they have experienced whether it’s race or gender. I can’t point to particular barriers—they could have been there, and I just was not aware of them or I didn’t discriminate them as such. I’m speaking from a significant place of privilege, right, I’m a straight, white, cisgender woman in a field that has been around a bit and other people have done a lot of really great work to pave the way. So, I can’t point to a time where I personally can say “oh I didn’t get that opportunity because of X, Y, Z characteristic about myself. Or, that something was harder for me.” There could have been barriers, and I just didn’t perceive them. I would say I have had people comment on some of my style choices and how I represent myself. I have had people make comments about whether or not I’m professional if I’m covered in tattoos, or if I have a shaved head, or if I speak or present a certain way, but I’ve also had so many opportunities and incredible people supporting me and pushing me forward. So, I can’t identify any particular barriers. I think it’s because I occupy a place of privilege. I move through the world reaping benefits that I didn’t necessarily earn. I will say I have been a barrier to myself in my profession, in my own lack of confidence or feeling like I didn’t fit or those kinds of things. I guess there were some financial obstacles from time to time, such as—can I afford to get my PhD? I’ve got two kids and a partner and what’s it like to live on \$25,000 a year in northern Utah. Look, I’m saying I can’t really identify barriers not to diminish other folks that are able to clearly tact and discriminate their obstacle. Those are valid and real, so me saying that I can’t name any doesn’t diminish others that people experience. I just either got really lucky or I was not savvy enough to notice them. In retrospect, I have been in meetings where, as a woman where I pitched an idea and no one gave it much thought until so-and-so said it. Of course that so-and-so happened to be a male. So, there is some of that.

*Something that many people in general can relate to as barriers are things like confidence. But, the image of a*

*professional woman and what that “should be” seems like a very real obstacle and people treat you differently. Those are great points. So, what are some of the things that are harder for you as a leader and how you overcome those?*

One thing is making space for accepting that I have bias sometimes that even makes me feel terrible because I can't control them. Some things exist because of the world we live in—so making space and not beating myself up over biases that I have but also not avoiding the discomfort that comes along with identifying those biases. I think that's another common response—“No, I'm a good person I couldn't be thinking that.” So, identifying biases and then choosing to be with the discomfort and then choosing to act differently—I think that should be difficult for all of us, so that's a big one. Things that were hard early on were having difficult conversations. Obviously, that's a skill set. I think people think that some people are just really good at it. But it's because they practice and practice and practice at it. So difficult conversations were harder early on; less difficult now, but still uncomfortable. I've seen people say to not call it “imposter syndrome,” but I struggle with being perceived as a leader. I struggle with being perceived as an expert. I don't think I'm an expert, but I struggle when people say things like “oh, but you're the XYZ guru,” or whatever. That's really hard for me to see myself in that position and I and I don't like it. Yeah, so those are the tough things.

*I can see all of those things being challenging. What advice would you give to up-and-coming professionals looking to the develop their leadership skills?*

Well, I think if you want to develop healthy high-quality leadership skills, you're more likely to do that if you are purposeful in the development of those skills. So, I think the first thing I would recommend is to reflect on your own experiences that you've had with leaders and supervisors and professors and coaches in the past, and how they have impacted you. What things did they do that were great and what things were not so great. And maybe take a hard look in the mirror and see which bits of their repertoires are showing up in your skills-- good and bad. So, in the book that Dr. Shala Ala'i Rosales and Dr. Linda LeBlanc and I wrote, we spent a lot of time talking about reflecting. We include the mentor tree activity where you go back and actually list those mentors and think about their skills. That's really important for me because as a behavior analyst I hated the idea that I was a product of my environment and early on I didn't control so much of it. When you're a kid your repertoires are getting shaped, but you don't really control much of it. Then when you're a young adult and early career and there's still so much you don't control. I hated the idea that I was kind of a victim of my past environments. So, when Linda and Shala and I were talking about that they put it into perspective. Yes, I am currently a product of my past experiences, but in reflecting on them I can choose to amplify the things that are beneficial and that are in alignment with my values. I can also choose to start behaving differently or getting other responses under different kind of stimulus control. Or maybe select

some things out very purposely. I think reflection is very important. I think also reading books about leadership and how to have difficult conversations is needed. And get a mentor. That is one of the most important things that you can ever do. I was very lucky mid-career to stumble upon having Dr. Linda LeBlanc as a direct supervisor and eventually a mentor of mine. And I would ask very specific questions about how you handle situations, what do you say to yourself in this situation. I would watch other good leaders and literally rip off phrases that they used that communicated difficult concepts or things that may have been hard to hear for the listener, but they did it in an elegant, kind, compassionate way. So – self-reflect, do some reading, and be a really good observer and then get you a mentor if you can.

*That is excellent advice and good points. It's funny you mentioned the exercise in your book of the mentorship tree, and how I'm thinking “you, Tyra, are definitely in my mentorship tree.” And you really hit the nail on the head with the way you've said things eloquently and describe how to do things in tough situations with tough conversations. You have definitely helped me with tricky career decisions and to navigate potential ethical issues. I've indeed taken or have ripped the page from your book and what I've observed from you. So, leaders often make big decisions what strategies would you use to calm your nerves when making big decisions?*

I don't tend to feel that I experience anxiety or a high level of nervousness around big decisions. I think about little bit of nervousness as my brain tacting that something important is afoot and I need to pay attention and I need to minimize risk and maximize benefit. But I don't tend to ruminate on the what if... what if...what if... Here's the thing with the decision: you only know if it was effective or “good” after the fact. It's sort of like determining whether something functions as a reinforcer or punisher? Well, you don't know until you've applied it. I feel similarly about decisions, so I try to think focus on making a thoughtful decision. Can I make a thoughtful decision? What are the risks? How do I minimize them? And sometimes you can't, and I think maybe that's where people get stuck. There are going to be some negative side effects of a decision, but if you know what they are, or you can likely predict them, then you can start planning to minimize the negative fallout from them as opposed to being paralyzed. Thinking “Why can't I make a decision?” is like analysis paralysis where you just go around and around with all of the possible ways that things could go wrong. So, I think what I would say to other people is: build a good group of folks that you can engage in structured problem solving—identifying the problem at the right depth and scope; do some brainstorming to come up with a pro/con analysis. Get some other perspectives. Get as much diversity in your team that support you as you possibly can, because what we know about diversity is that it breeds creativity, and more effective problem solving and more successful outcomes of problem solving. So don't build a go to group of people that all look alike, think alike, move through life the same way you do. They're basically just going to be an echo chamber and then at some point you just

have to rip the Band-Aid off and make the choice. So just give yourself grace and remember that you're a behavior analyst, which puts you in this beautiful position. That you have repertoire or a history of generally making decisions that turned out OK. Probabilistically, this one is going to turn out OK too. And as a behavior analyst you are equipped with tools and technology that will allow you to monitor the outcome of your decision and change it if it wasn't exactly what it needed to be. And the cool thing about being a human is if it wasn't the most optimal decision in the rearview mirror, you get to make another decision. It's not your last decision ever.

*I love that; that's such great advice, and relates like you said specifically to what we do as behavior analysts. So, what should behavior analytic organizations be doing to support women in leadership and do you see missed opportunities in the field?*

I'm not sure about missed. I mean obviously there are missed opportunities, but I think those are just a function of the systems that are in place and intersectionality of all of the -isms. I think the things that organizations should do to support women are the same things they should do to support diversity, in general. I think they should take a long hard look at their makeup. Is it super homogeneous? Does everybody in a leadership position look like they kind of are they cut from the same cloth. I think thinking long and hard about, again, that idea of professionalism, and what it means to be a professional. For example, some of the ways that I think things show up for women are if I communicate something very directly, I may be perceived as bitchy or PMS-ing, or something like that. Where a man might be perceived as direct or confident. So, challenging organization leaders to explore whether or not there are any of those sorts of biases that are happening that could be limiting access for other folks is important. I also think organizations need to make space for caregivers or parents-- I won't say women because anybody can be in that kind of caregiver role, whatever the gender. We need to make sure that organizations are thinking about what supports those folks need in terms of time off, or understanding the additional pulls on people's time. Mostly, I think that's taking a good hard look at what are the barriers that they have self-created in terms of what they think a leader looks like versus, functionally, what a leader should look like.

*We're seeing some change in the zeitgeist of our time to move in that direction, but I still think it requires that push from leaders. That can be very helpful to caregivers and professionals. So, what are your goals as the leader of APBA?*

To develop robust relationships with professionals and stakeholders in our profession to come to a fuller understanding of what they need from a membership organization. I value a servant-leadership model. For me a leader is more of a facilitator, and I think the way that I can do that well at APBA is to make space and understand what people need. Where are the pain points? Where are the barriers? Where are the lack of resources? How can APBA be a source for those things? How can APBA be the professional community or the

community of practice for folks and still continue working for protecting our right to practice. That has been a pretty big focus of the APBA's for a very long time and a necessary focus. I think my goals are more about me (laughs). Sorry everybody! But for me to learn what other folks need. I don't have this idea that I somehow have the answer to moving our profession forward in a healthy and meaningful way. More, I think I'm willing to ask those questions and listen to people and then try to synthesize how we're going to get there from that information.

*Related to that, and maybe specifically to APBA: Do you have any initiatives to support women in leadership positions?*

I'm new to APBA so I can't speak for them about that. I will say APBA has a diversity, equity, and inclusion committee. I support WIBA and often present at the conference and, hopefully, I'm supporting colleagues and other upcoming professionals—regardless of their gender, women or not, moving into leadership positions. I mean, again, I understand the focus of this interview and the Operants issue that's coming out related to women in leadership in behavior analysis and practice, but for me I think it's hard to separate that from wanting to move forward with other initiatives related to increasing diversity in lots of different ways. For many people, and honestly, the people that really need to be in leadership positions, being a woman is only one piece of their identity. Right? Like, we all have intersecting identities and I think that the individuals that I would like to support and make space for are folks that have complex, interesting, intersecting identities that will bring that to bear on our profession. Because I think that's what we need. I have a lot of female, and trans, and gender-nonconforming colleagues who are tremendous and who I learned so much from and I hope my initiative is that I'm simultaneously supporting and lifting them. ○

## ABOUT THE INTERVIEWER



Casey Clay received his PhD at Utah State University (USU) and is an assistant professor at USU. He was previously a postdoctoral fellow and an assistant professor in the Department of Special Education at the University of Missouri. He has also held clinical appointments as the Director of Behavior Clinics at Children's Hospital of Orange County (CHOC) in California. Dr. Clay is an author of the 7th edition of Behavior Analysis and Learning: A Biobehavioral Approach textbook and has also authored textbook chapters and research articles on training and severe behavior intervention. Dr. Clay is currently serving on the editorial board for Operants.



# HÉLÈNE ABDELNOUR: BUILDING AN ABA COMMUNITY IN FRANCE

INTERVIEW BY MARIE-CÉLINE CLEMENCEAU

*In June 2023, the Best of ABA Scientific Congress took place in Cagnes-sur-Mer, France. Helene, I have to say the success of this conference has a lot to do with who you are. Can you tell us more about how you came up with the idea?*

We created an online Verified Course Sequence program in France back in 2018. We have important books that have been translated into French. The number of professionals has multiplied. The question arose of how we were now going to federate and ensure continuous learning. Not everyone can easily access English or go to the United States every year. I wanted to bring scientific knowledge back to France and link the community of professionals around a yearly event.

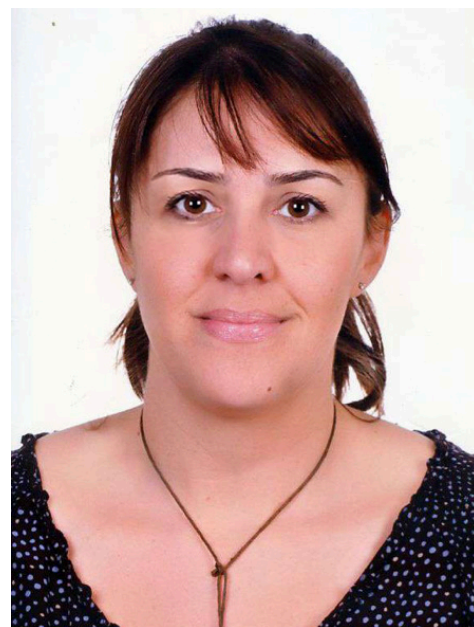
When I started the translation of the books and the online program, I got in touch with several leaders in the Applied Behavior Analysis (ABA) world such as Dr. Neil Martin and Prof. William Heward. During our conversations, we discussed the idea of having an event here in France. Neil had given me this idea during our first conversations in 2018 but when several of those ABA stars mentioned that they would be happy to come present at this event, it was definitely the trigger. I had to make it happen!

**Why «Best of?» Why not FranceABA congress?**

I had worked with several American medical associations with whom I organized "Best of." The concept was to present in Dubai and the Middle East the best abstracts from their annual meetings. I wanted to take up the idea of the Best of and choose the most impactful information in the world of ABA and present them in France. Hence the "Best of."

**Can you explain how you chose presentation topics and presenters?**

I wanted at all costs for the content to remain neutral and not influenced by anyone, including me. :) That's why it was very important to have a scientific committee that was composed of volunteers. Their mission was to guide and decide on the subjects of the presentations and the



*Hélène Abdelnour studied in the United States where she obtained a double Bachelor's degree in Business administration and Foreign languages followed by a Master's degree in Business administration (MBA) in 2002. Subsequently, she worked in several areas including real estate and medical communication in which she developed multiple projects for international pharmaceutical companies. In 2015, following the autism diagnosis of one of her daughters, she started training in ABA with ABA España and then obtained a Master's degree in ABA in 2019 from Queen's University in Northern Ireland. She obtained her BCBA certification in 2021.*

*She also has always been involved in charities and, facing the lack of qualified professionals in France to help children, she created the first online French Verified Course Sequence program. She led and published a consensus on ABA terminology in French and the translation of several books such as, among others, Applied Behavior Analysis by Cooper, Heron & Heward, Behavior Modification by Miltenberger, and Ethics for Behavior Analyst 3rd ed. by Bailey and Burch. Her goal is ultimately to disseminate ABA in France and through this to have more qualified personnel to help the clients.*



presenters, to ensure that topics fell within the scope of ABA in all its dimensions, and to minimize the conflicts of interest in the choices that we would have to make over the course of the organization.

Of course, this edition was mainly aimed at debunking the myths around ABA and showing what it really is. It was essential that the participants understand that we do not “do” ABA after 2-3 days of training! Also, we have clearly highlighted the importance of respecting the clients and their project in an approach that is as ethical as possible. After all, I’m doing all this for them! And we wanted to follow Skinner’s vision that ABA can be applied to different fields, an ABA that aims to improve people’s lives directly in their daily lives, one that targets all behaviors in all areas, for everyone and for every day.

***Any reason for choosing the South of France for such an event?***

Why should everything always happen in Paris? ABA must be disseminated everywhere! I also wanted the vibe to be relaxed and joyful to help create bonds even outside of the event while keeping a high quality, and that is what happened. In the South, the weather is also very nice so we thought that it would motivate the international speakers to come share their knowledge with us. :)

***Do you know how much the event impacted the participants?***

From the feedback we got, the choice of presentations and the organization itself demystified ABA and gave the image of a professional, positive, human, accessible science that is applicable to many areas of social significance. Participants told us that it felt good to see each other, to meet for real, especially after 2-3 years of zoom and online events.

Students explained that it gave them a vision: that of why they are doing this training and where they would like it to take them - including presenting at Best of ABA! They know better what they have to do now to advance in their knowledge and to advance ABA in France and help the clients.

Professionals said they were motivated to train, get certified, and saw the value of continuing to learn. Certified people said they were revitalized for new projects, to come together and work together more. We were very excited about all the positive feedback!

***What were the key and memorable moments of this event?***

The presenters gave us a model of accessibility, humility, respect, non-judgment, and sharing. Everything has been translated into French and English in both directions. This allowed English native speakers to be able to follow the presentations in French. They listened to what everyone had to say. They asked questions, shared, guided, and supported. From the height of all their knowledge and experience, the smiles and the time they gave, including outside of their presentations, were such an honor.

Their presentations showed the progression that was made through time and showed the technical aspects of each subject without using jargon. It reinforced the message we also wanted to convey: to learn and apply our science at the highest level but to make our communication accessible and understandable by all.



Some key international speakers shared with us the joy of seeing and living with us the development of behavior analysis in France as they themselves had experienced it in the United States many years ago. This gave us a lot of strength and motivation for the future.

***With such an impact, what do you plan now? Best of ABA-2? When and where?***

Definitely for Best of ABA-2! We can’t wait to live again this moment in time! It will surely be in June 2024 and surely in the South! We are brainstorming!

It would obviously be ideal to make an annual Best of ABA if possible, to gather the community of behavior analysts and let projects emerge between them over time for clients and in all areas. That is my ambition! ○

## ABOUT THE INTERVIEWER



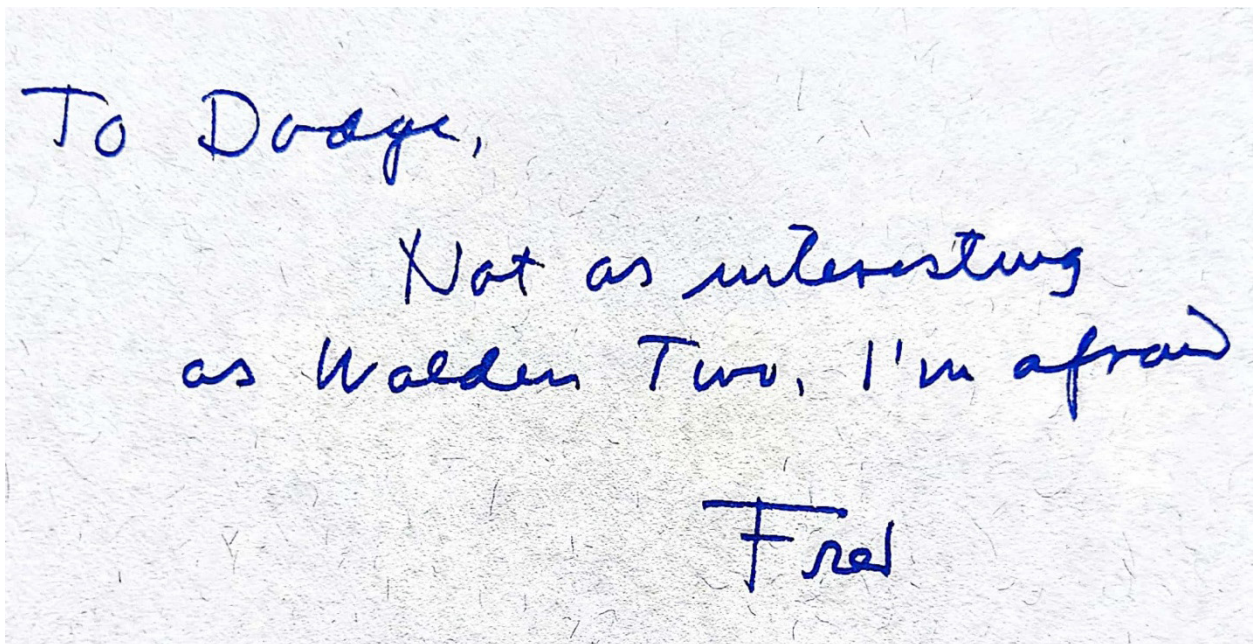
MarieCeline Clemenceau has a master’s degree in psychology. She has been a certified behavior analyst for 12 years and an instructor in Professional Crisis Management for 10 years. She has cumulated experience in France and the United-States. She currently intervenes and supervises professional practices in ABA centers and non-ABA-based centers across France. She teaches courses and trains in Basic Principles, Ethics and Crisis Management. She helps professionals in direct intervention and administrators understand how to use behavior analysis principles and techniques to impact their services for children and adolescents with special needs and how to organize services to clients’ risks and staff fatigue. She also contributes to translating texts from English to French (Operants From the President and Science Corner features; Applied Behavior Analysis 3rd edition by Cooper, Heron, & Heward; Professional Crisis Management Manual), and she is currently serving on the editorial board for Operants.

# OUR DAD'S FRIENDSHIP WITH B. F. SKINNER, 1961-1990

Darcy Fernald Caldwell

AN INTRODUCTION BY DAVID ROTH:

In the summer of 2018, I ordered a used copy of B. F. Skinner's final published book, *Recent Issues in the Analysis of Behavior*, from an online bookstore. The book's description on the website indicated its condition as "like new, with some markings on the inside cover." When the book arrived in the mail, the inside cover revealed the following "markings":



*"To Dodge, Not as interesting as Walden Two, I'm afraid. Fred"*

Ecstatic that I had just received an autographed copy of Skinner's book, I immediately contacted Dr. Julie Vargas to see if she knew who Dodge was and what his connection might be to Skinner's utopian novel. Julie explained that "Dodge" was most likely Dodge Fernald, a friend of Skinner's and author of a book titled, *Walking Tour of Walden Two: A Student's Guidebook*.

I attempted to track down Dodge on the internet, but my search ended after stumbling upon an obituary page announcing his death just a few months earlier. Having read through the many comments from Dodge's friends, students, and loved ones, it was instantly clear to me that Dodge Fernald was a remarkable person. I concluded my investigation by writing to the owners of the obituary page, telling them about the inscription in my book and to see if they had any insight into the friendship between Dodge and Skinner.

Five years passed without a response, so it seemed that the website was no longer in use. However, on March 18<sup>th</sup>, 2023, two days before Skinner's 119<sup>th</sup> birthday, and two hours before I was headed to the annual B. F. Skinner Foundation Board meeting reception, I received an email from Darcy Fernald, Dodge's daughter, who had just discovered my message. Throughout several email exchanges back and forth, a friendship was formed between the two of us. Darcy and her family had so much to share about Dodge and about Fred Skinner's influence on his life, and, in turn, on their own lives. Below is an essay from Darcy which details some of these influences. I immensely enjoyed reading these stories, and I am certain you will, too.



*Inspired by her father and mother's vibrant lives in education, Darcy Fernald Caldwell taught English for 39 years at various independent schools in Massachusetts, Connecticut, New York, Delaware, and New Jersey. Continuing her father's passion for combining teaching and coaching, she coached girls soccer and lacrosse for the first decade of her teaching career.*

Our operant-conditioning-loving dad (L. Dodge Fernald) was all about having fun while being productive. He made everything—ordinary tasks and labors—into a game, even grocery shopping. When we were nine, seven, five, and four, he would have each of us push our own carts through the grocery store in Ithaca, New York. We filled our carts relatively appropriately, feeling a great sense of empowerment in this exercise. This was a time when Dad was earning his PhD in clinical psychology at Cornell University even as Mom was earning her master's degree in education and child development. It was the early 60s and Civil Rights and Vietnam protests were in the air.



*1966 Post-grocery shopping photo with Dodge and his four children. (Left to right) Darcy, Lucinda, Kirk and Stephanie.*

We had arrived to Ithaca after four short years in Brunswick, Maine, where Dad taught psychology and coached both varsity soccer and varsity lacrosse at Bowdoin College. It was also at Bowdoin where Dodge's 30-year friendship with Fred began. While our early memories do not include B. F. Skinner in person, we well remember Skinner boxes and a long line of pet white lab rats: Snoopy, Sheila, Puskus, Ratone, and so on. In our tiny little house on 13 Longfellow Avenue, we had our first white lab rat, Snoopy, who was very adept in his Skinner box and beloved by our family. He lived—if you can believe it—beneath our dishwasher, and he roamed freely through our home, crawling into our beds with us at night. Each of us would delight if we were the chosen night-time companion. When our little brother would answer the door, he would be sure to have Snoopy perched on his head. We kids have only fond memories of this creature that marked the beginning of our early exposure to B. F. Skinner's theories.

It was at this time that Dodge invited Fred to speak to his Bowdoin students about operant conditioning. B. F. Skinner was not well-received. As our mom explained, the students were skeptical of this "electric box," wary of something that to them seemed "prison-like," and for some of them, Skinner's ideas collided with their beliefs about God. Since I was five at the time and Mom (Marjorie Maxwell Fernald) is now ninety-one, this collision of

the students' beliefs between Skinner and God cannot be further explained except to say the Bowdoin students in the 60s were not open to this scientist who made "electric cribs." As we know, B. F. Skinner was, perhaps, ahead of his time. For my four-year-old self, my strongest early memory of this era beyond our beloved home and our elementary school down the street was standing at the top of the stairs and hearing that John F. Kennedy was shot.

Through the next decades, Dad would go on to teach at Universidad de Madrid, Wellesley College, Universidad de Compostela, and in his final three decades, Harvard University even as he continued to write and to coach all of us kids in soccer and lacrosse. All the while Dodge's friendship with Fred continued. Our mother explains that when a young man does not connect with his father, he sometimes looks further abroad, and certainly Fred was a mentor for our father not only in his professional life. Dad was drawn to Fred's values and inclinations: his scientific curiosity, his graciousness, his humor, and his humility.

Dad wrote a number of textbooks, his most successful being the 1965 edition of Munn, Fernald, and Fernald *Introduction to Psychology*. At one point this book was the most successful introductory psych text in the nation. We never remember Dad *not* writing or revising a psychology book for a significant part of his day, most likely inspired by Fred, who always slept in his basement, arose at 4:30 AM and immediately walked to an adjacent room to write for at least two hours. Dad had the most fun writing *The Hans Legacy*, and it was this text that led Dodge to write *Walking Tour of Walden Two*, where he collaborated with his friend and mentor, Fred, who wrote the introduction to that book.



Original drawing of one of several illustrations, by Brian Dow, in Dodge's book. The character in the middle (likely, Burriss) is depicted by a sketch of Dodge.

One day in the spring of 1989, our mother returned home after a long day in her Career Counseling office at Holy Cross College to find 12 people sitting around our living room talking to Dad. These people had driven 2,838 miles from outside Hermosillo, Mexico to see B. F. Skinner, the man who had inspired their community modeled after Walden Two. These members of Los Horcones (sometimes described as the only true Walden Two community) made this 43-hour trip in two makeshift vans that

were composed of parts from their own cars. When they arrived at Fred's home in Cambridge, he sent them for lodging at his friend Dodge's house in Wellesley, unbeknownst to our mom. While she had not heard about this plan, she was used to Dodge's unexpected ventures, and she described how immediately delightful she found the guests. When the Wellesley police knocked on the door, wondering about these "unmarked vans," she told them not to worry. Since we did not have 12 extra beds, the visitors from Los Horcones slept on the floor in the studio apartment in our house, and for meal preparation shared the stove with Mom. During the day, they would go to B. F. Skinner's house. Mom was especially impressed by the teenage children, who she found engaging, capable, and helpful.

A year later, the last time Dad saw Fred, he was in the hospital. Mom described sharing the elevator with Ted Kennedy as they rode up the elevator in Mass General Hospital. Mom stayed outside the room as Dad went in to speak with the man who had inspired him so much during his career. In typical fashion, in tune with his gracious, calm, accepting manner, Fred's words to Dad were "As a terminal illness, I highly recommend leukemia." Through the years, Mom and Dad sometimes returned to this moment, marveling at how like Fred it was. He was not in pain; he knew the end was near, and he offered Mom and Dad peace of heart. ○



Marjorie and Dodge Fernald, Harvard University, 1993

**Author's Note:** I cannot account for the phenomenon that David Roth—who lives hundreds of miles away—would end up with my father's copy of *Recent Issues* through a used online book store. I cannot explain what prompted me in March 2023 to return to my father's condolences site six years after his death to find David Roth's 2018 email. Nor can I explain the extraordinary timing that David would receive my belated response moments before he was walking into the annual Board of Directors meeting for the B. F. Skinner Foundation. But how serendipitous was this sequence of events for my mother! Sparked by David Roth's outreach, Mom found great joy in these memories of B. F. Skinner in the weeks before her death on June 5, 2023.

INTRODUCTION BY SYDNEY BERKMAN AND JULIE S. VARGAS



The purpose of this series is to share with *Operants* readers some of the notable findings of the B. F. Skinner Foundation's ongoing archival project. Our archival item for this issue is a previously unpublished short passage Skinner wrote in 1960 musing about the concept of "verbal atoms" with respect to his (and others') verbal behavior (see the transcript below). Dr. Vargas writes:



Skinner made many notes about what controlled his own verbal behavior. This note traces why, in thinking about the ship ribs shown in the photo below,

he used "twelve to twelve" first, and then corrected it to "twelve inches center to center." He speculates that the pattern "x - to - y" (which also occurs in "center to center") was a factor (a verbal atom) in his saying "twelve to twelve." The same verbal atom occurs in numbers, and a number (twelve) was part of his original description.

Verbal "atoms" provide possible controls over verbal behavior far subtler than those of traditional linguistics. This note illustrates examples of "verbal atoms" that syntactical or orthographic rules could not explain. ○

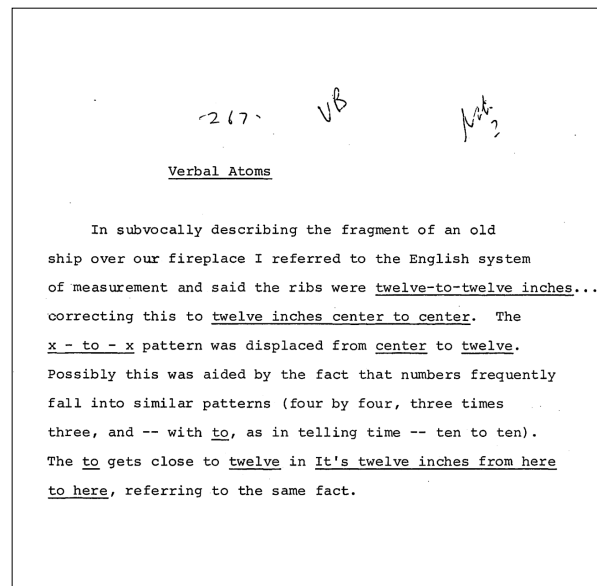
*Verbal Atoms*

In subvocally describing the fragment of an old ship over our fireplace I referred to the English system of measurement and said the ribs were *twelve-to-twelve inches* ... correcting this to *twelve inches center to center*. The *x-to-x* pattern was displaced from *center* to *twelve*. Possibly this was aided by the fact that numbers frequently fall into similar patterns (four by four, three times three, and -- with *to*, as in telling time -- ten to ten). The *to* gets close to *twelve* in *It's twelve inches from here to here*, referring to the same fact. Yet in spite of this, there is a transfer of a verbal 'atom' from one component to another. It is like putting the possessive 's on the wrong word or capitalizing the wrong word, but the example is not syntactical or orthographical.

It would be very hard to prove much of this (especially statistically) and very hard to generate much of it experimentally, though a comparable case might turn up, like rubbing your stomach with one hand while patting your head with the other. Fortunately, it doesn't matter in the present stage of our knowledge.



Above: Skinner found this bottom of a ship on Monhegan Island. It was displayed over the fireplace for years, but is now in what was his dining room.



Above: Photocopy of the note on Verbal Atoms with Skinner's edits of the typed text.

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