Autistic Behavior, Behavior Analysis, and the Gene

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This article addresses the meaning of autism, the etiology of autistic behavior and values, the nature-nurture debate, contingencies vs. genes, and resistance to a behavioral analysis of autism.

PROLOGUE

I am a radical, fanatical behavior analyst who thinks he knows everything there is to know about the use and misuse of reinforcement contingencies. Two semesters ago, I started working with a beautiful, non-verbal 4-year-old boy in the preschool autism classroom at Croyden Avenue School—my first hands-on experience with these kids. And like all my students who do their practica there, I fell in love with my child.

One day, we are quietly standing outside, waiting for the school bus, hand in hand, when I notice a little tear sliding down his beautiful cheek. My heart breaks and I immediately give him a warm, caring, supportive hug, and a nanosecond later I realize I am reinforcing inappropriate behavior, whatever behavior it was that squeezed out that little heart-breaker tear. Only the coldest, most calculating of refrigerator professors could have resisted, even after having come to grips with the overwhelmingly counter-intuitive notion that, usually, if not always, emotional behavior may be controlled by its reinforcing consequences.

Last semester I had the privilege of working with another five-year-old boy; this boy had learned to speak during the year he had been in the program. And as his six-hour work day would enter its last two hours, he would ask with increasing frequency, "I see Mommy?" And the discrete-trial trainer would reassure him, "Yes, at the end of the day." "In two minutes?" "OK, yes, in two minutes." They would frequently interrupt their discrete-trial training to do that Mommy-two-minutes dance.

But, we more-experienced behavior analysts knew that this disruptive behavior was controlled by the social reinforcers of attention and perhaps by brief escapes from the training task. So we ignored it, not prepared for the disastrous consequences, the escalation from a whine to a full scale tantrum so effective that it brought over all the staff to see what horrible things we were doing to the poor child. However, the staff agreed that extinction was the intervention of choice; so they implemented extinction classroom wide—everyone would ignore this behavior.

And, of course, I was the most consistent in implementing this extinction procedure; I was the consummate professional, with the cold eye and the warm heart. At least until the child learned to say my name. "Dr. Malott." What powerful music, at least to my ears, "Dr. Malott." He knows me, he respects me, he needs me, he appreciates me, he loves me. And probably, he even knows that my calculated extinction of his Mommying is with his best interest at heart. So I continued the extinction with graceful ease, until after several ignored I-see-Mommy's, he said, in the most heart-breakingly plaintiff voice, "Dr. Malott, I see Mommy?" Me! He needs me! He needs Dr. Malott to reassure him. It was all I could do to refrain from rushing to his aid with the perfunctory reinforcer, "In two minutes"; and if my students had not been covertly watching me, I would have. It is so hard to come to grips with the notion that emotional behavior may be more of a learned response controlled by its reinforcing consequences than an expression of inner need, a cry for help from deep within the soul of the child.

In any event, this five-year-old boy had become so skilled in his autistic behavior that he brought us all to our knees, radical, fanatical behavior analysts included; eventually, we officially copped out with some cognitive, face-saving variant of "In two minutes."

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Now, dear reader, you may be chuckling to yourself, "Of course, why get into a power struggle with a five-year-old?" And you may be right, or you may not be. But my point is that even when we think we know what we are supposed to do, applied behavior analysis can be so counterintuitive, so against our gut reactions, so against the immediate contingencies, that even the most dedicated of true believers sometimes have trouble doing it right.

Now, take 100 million average moms and dads, without Ph.D.s in behavior analysis, or more important, without ten years doing discrete-trial and natural-environment training. And take some little, accidental contingency that happens to get some insignificant, little autistic behavior going in their one or two year old. There is no way Mommy and Daddy are going to do it right. No way are they not going to reinforce that crappy little behavior and fail to reinforce that tiny, little appropriate behavior. And depending on the roll of the dice, a few of those episodes can spiral into a small percentage of children who do not learn to talk but do learn all sorts of dreadful alternatives. The amazing thing is not that there are so many children who do not talk and do all sorts of bad alternatives. The amazing thing is that so many children do learn to talk and keep their bad alternatives to a minimum. There but for the grace of a few rolls of the dice, go we all.

WHY THE RESISTANCE?

Public Relations

As readers of this journal know, the most successful interventions with autistic repertoires and values have involved removing the contingencies that functional analysis suggests support autistic behavior, adding performance-management contingencies that support the learning of appropriately functional behavior, and pairing of stimuli and events with reinforcers to create appropriately functional learned reinforcers (values). So the obvious, logical place to look for the etiology of those autistic repertoires and values is in the behavioral history, not the gene. Yet most parents and, maybe, most behavior analysts hang on to the gene, perhaps in large part as defense against being considered inept parents and inept professionals. Unfortunately, the victim-blaming concept of the refrigerator mom still has not thawed.

(The refrigerator mother was the concept invented by psychoanalyst Bruno Bettelheim (1967) to explain why some children were "autistic"—the mothers were too cold, they did not show enough love and affection to their children. Wow!)

But, the need for such a defense against victim blaming may result from the difficulty of appreciating the power of subtle behavioral contingencies. The occasional preschool acquisition of autistic repertoires, etc., may be inevitable, unless all children are raised by two Ph.D. behavior analysts with specialties in autism supported by a gang of M.A. behavior analysts. That is the point of the prolog. No one is to blame. No one can resist the natural contingencies, not the child, not the parent, and not even the professional, at least when no one is looking. And even if Mom or Dad happens to be a professional behavior analyst, it is one thing to come in a few hours a day and consult with the classroom teacher or the parents, point out what they are doing wrong and what they should do right. That is their job and, more importantly, their only job while they are wearing their consultant's hat. But I have not been overwhelmed with the success behavior-analyst parents have had consistently implementing appropriate behavioral contingencies when they return to their own homes, where, like all parents, they concurrently wear so many hats they get headaches. Without outside professional help, it is almost impossible to do it according to the book, especially with a child who is becoming increasingly skilled in autistic behaviors. The problem is not so much the refrigerator moms; it is the warm, caring, loving moms who are doing everything our culture has trained them to do—attending to their child's every need, his every whimper, etc. It just ain't easy.

Trojan and I (1999) did an ABA PowerPoint presentation of our take on an earlier version of the Drash and Tudor (1993) behavioral-contingencies analysis of the etiology of autism. Afterward, one of the most prominent autism experts came up to me and politely said, "Excellent presentation," and then got to the real point, "Of course, you wouldn't want any autism parent to hear this." However, the chair of ABA's Verbal Behavior SIG placed our PowerPoint presentation on their Web site, with our permission. The results soon demonstrated the reason for the prominent autism expert's

concern; at least one autism parent was outraged.

The problem is distinguishing between scientific discussion and public relations. We do not want to hurt the autism parents' feelings, for two reasons: First, these parents have already been hurt more than enough; I can't imagine the amount of suffering they go through. And second, they pay the bills; they pay the prominent autism experts. But behavior-analytic scientists, theorists, and practitioners need to be able to consider and discuss various views of the etiology of autism, including the contingency-analysis view, without fear of public-relations censoring. And where should they do this considering and discussing? At professional conferences and in scientific journals, of course. Except, who constitutes half the autism audiences at ABA? Autism professionals? No. Autism parents. And who reads every behavior-analytic autism article published? Autism professionals? No. Autism parents. They may be the world's best informed laity. Therefore, both parents and professionals must understand that a contingency analysis of the etiology of autistic repertoires is not a scholarly form of victim blaming, not an attempt to retrieve the discredited concept of refrigerator mom from the overflowing junk yard of disreputable psychological concepts. And it is that understanding I have attempted to enhance in much of the first part of this article.

And, in this context, let me commend the editors of *TAVB* for their intellectual integrity and courage in publishing the controversial Drash and Tudor (2004) behavioral contingency analysis of the etiology of autism, in spite of the well-founded fears of other professional behavior analysts.

The Gene Made Me Do It

In addition to problems of public relations, there is another reason for resistance to an analysis of the etiology of autistic behavior in terms of behavioral contingencies. As nature abhors a vacuum, humankind abhors a phenomenon unexplained. First, we had the animistic notion that we could explain why things happen as they do because of the spirits in the trees, rocks, animals, and people, and because of external spirits not embodied in the material world, and because of the evil spirits and

the good spirits (Harris, 1983). However, these easy explanations in terms of invented fictions have tended to give way to more complex, more painstaking, more difficult scientific analyses that in turn have generated more effective technologies for dealing with the world, for guiding it in directions more supportive of a humane environment. We no longer torture the mentally ill in order to drive the evil spirits from their bodies and souls.

But the complexities and subtleties of human behavior have been a most recalcitrant subject for scientific analysis, with the result that many people have switched explanatory fictions, moving from spirits to the mind. Why do people behave as they do? Because of their minds, because their minds tell them what to do, because of their cognitions, their cognitive structures, their IQ, their self-efficacy, their expectancies, their wants; obviously, if someone does something, it is because they want to; QED, question answered, and so easily answered. However, for behavior analysts, these easy explanations in terms of invented fictions have tended to give way to more complex, more painstaking, more difficult scientific analyses that, in turn, have generated more effective technologies for dealing with the world, for guiding it in directions more supportive of a humane environment. We no longer label children "autistic," automatically pronounce them incurable, and stick them in institutions for the rest of their lives.

But in spite of the many successes of behavior analysis, the complexities and subtleties of human behavior often remain a recalcitrant subject for scientific analysis, with the result that even behavior analysts have hopped on the band wagon switch in explanatory fictions, moving from the mind and its cognitions to the gene. Why do people behave as they do? Because of their genes, because their genes tell them what to do; question answered, and so easily answered. However, for some behavior analysts, perhaps only an unhappy few, these easy explanations in terms of invented fictions are not good enough. The IQ gene, the criminality gene, the hetero/homo/bi/transsexual gene, the addictive-personality gene, the autism gene are too simplistic as explanations of complex, subtle differences in human behavior, even when these new forms of biological determinism are expressed in terms of blood chemistry, amniotic fluid, brain chemistry, or

whatever; it does not suffice simply to invent a gene or a combination of genes to account for complex, hard-to-change behavior, such as autistic behavior. We do not want to be a western version of the Pacific-island cargo cults (Harris, 1983), waiting generation after generation for the ship to arrive laden with the gene-fixing, autism-curing pills that will so easily take care of all our problems.

The Drash-Tudor Contingency Analysis

Therefore, we owe a great debt to Drash and Tudor (2004) for their pioneering efforts to give us a more complex, more painstaking, more difficult scientific analyses of the etiology of autism, in terms of behavioral contingencies, an analysis that, in turn, may generate more effective technologies for dealing with the world, for guiding it in directions more supportive of a humane environment, for helping to prevent early childhood acquisition of autistic repertoires and values.

I think the Drash and Tudor article is one of the most important in the field of autism, if not the field of behavior analysis. It is one thing to say, "Yeah, all that autism stuff is learned." But it is something else to point to a plausible set of detailed environmental configurations and contingencies that could potentially account for the acquisition of an autistic repertoire of excesses and deficits.

However, when I read their earlier article that presented a similar analysis of the contingencies responsible for preschool verbal delays (code words for *autism*) (Drash & Tudor, 1993), my enthusiasm was mildly attenuated by the possibility that they had generated their brilliant analysis from the comfort of their arm chairs, with little real autism experience. So I presented their analysis at los Horcones, one of the best and one of the two oldest behavior-analysis autism programs in the world (over 30 years old). And I asked them how this jelled with their considerable autism experience. And they unanimously said 100% (los Høcones, personal communication, 1999). Then I had the opportunity to discuss that article with Drash himself, and asked him how much was from the armchair and how much was from experience. He said 100% was based on their extensive history of working with families and children with autistic behavior (Drash, personal communication, about 2000). And fortunately,

Drash and Tudor have sprinkled a few illustrative case studies throughout their most recent article (2004).

Of course, a few case histories/case studies do not an experimental analysis make; they may convince only the already convinced. But a few case histories/studies can be the first step toward the systematic collection of a much larger, more convincing set of case histories/studies, a set that would more clearly confirm, or disconfirm, the Drash and Tudor contingency analysis of the etiology of autism. And I hope the field of behavior analysis broadens its scope of acceptable research methodologies so that a thousand such studies will blossom.

The Pill

But it will not be easy; the Drash-Tudor contingency analysis has a well-heeled opposition—the pharmaceutical industry. That industry is playing a major role in the privatization of basic, university and medical-school research. Paying the piper, they are calling the current pop tune which so many biological, medical, and even behavioral researchers play. The genre of that pop tune is frame all behavioral problems in terms of biological determinism, and now with the human genome at the top of the charts, that specific pop tune is frame all behavioral problems in terms of the gene. Why is the pharmaceutical industry spending so much money on basic genetic and bio-behavioral research? So it can spend even more money advertising and selling pills it claims will cure those problems—for example, autism. So they can make even more money selling the pill or the vaccine that will prevent or cure the dreaded genetic disease autism. And just as our population is becoming increasingly obese, while waiting for the fantasy anti-obesity pill that is so much more attractive than doing the really hard work of rigorous diet and exercise, families suffer the increasing horrors of autism while searching for the fantasy anti-autism pill that seems so much more plausible and reassuring than the 24/7, excruciatingly hard, careful contingency management needed to reverse their child's slide into a nearly irreversible set of autistic behaviors and values. And society waits, too, for the autism-gene marker rather than doing the really hard work of developing and implementing early behavioral screening procedures that will detect the

early acquisition of autistic behavior and values early enough to significantly increase positive outcomes of behavioral interventions. Beware the medical/pharmaceutical-industry complex. (For a more carefully reasoned presentation of the data supporting my hysterical, anti-pharmaceutical-industry rant, please see Rampton and Stauber [2000], Valenstein [1998], and Whitaker, [2001]).

Nature vs. Nurture vs. Nature and Nurture

In a misguided effort to appear broadminded, most people, including most behavior analysts, say it is not a question of nature vs. nurture. It is a question of nature and nurture. Everything we do is partially a result of our inherited nature and partially a result of our nurturing, what we have learned. And of course that is true, but only in an obvious, trivial sense. The question is not what is the basis for what we do? The question is what is the basis for the difference between you and me? And that basis may be all genetic (e.g., our different eye colors) or it may be all learned (e.g., my preference for Thelonus Monk vs. your preference for Britney Spears). And if you are pretty sure you have a Britney Spears gene, consider this example: Two rats, each in a Skinner box. We water reinforce left-lever presses for one rat and right-lever presses for the other, with the obvious results. And that resulting difference in right vs. left lever pressing is 100% learned—100% a result of the contingencies of reinforcement. Of course there is a biological basis for the lever press itself, for the reinforcement process, etc., but no difference in genes or any other pre-experimental biology accounts for the differences in right-left lever preferences.

And it is equally meaningful to ask about the basis of the differences in water reinforced operant responses in two children. One child says, "Water, please," and gets a class of water, while another child tantrums and gets a glass of water. As in the Skinner box, the difference between the two children in the frequencies of "water, please" vs. tantruming may also be 100% learned—100% a result of the contingencies of reinforcement described by Drash and Tudor (2004). In other words, it is often not a question of nature *and* nurture, but rather nature vs. nurture. Nature determines our unlearned reinforcers, but nurture determines the behavior that is reinforced.

VERBAL BEHAVIOR ABOUT AUTISTIC BEHAVIOR

It seems like almost everything I read about autistic behavior starts off explaining that autism is no single disorder, but rather a rich array of disorders: some kids do not talk, some do; some tantrum, some do not; some aggress, some do not; some self-stim, some do not, etc., with all possible combinations of the preceding problems and many more. My question is why clump all these problems under the label of autism? Why not just say there are almost an infinite variety of ways kid's repertoires and values can go awry? And sometimes some kids end up with so many problems of such severity that they need professional help; and then let it go at that. Why do even we behavior analysts continue to be shackled by our psychodiagnostic ancestry, with its need to put labels on everyone, labels that turn into reified, psychodynamic or genetic causes of human behavior?

Furthermore, many people, including me, are uncomfortable with applying labels to people, such as saying, "Jimmy is autistic." It would be more accurate to say, "Jimmy has an autistic repertoire." Some have started using the expression, "with autism," as in, "Jimmy is with autism." And while the desire to stop labeling people is a noble one, such expressions as "with autism" may cause even more problems. They suggest that autism is a thing like a disease or a cold that a person has caught. This then leads to inferring a causal entity from a person's behavior, an illogical form of analysis—reification, circular reasoning: Why does Jimmy act strangely? Because he has autism. How do you know he has autism? Because he acts strangely. Better just to say he has a "repertoire of autistic behaviors" and then look independently for the causes (Malott & Trojan, 2004).

However, repertoire does not quite cover it. The child may have too many inappropriate behaviors, like tantruming and not enough appropriate behaviors, like verbal behavior (aka, language). But also, the child may have problems with learned aversive conditions and learned reinforcers; for example some stimuli that should be reinforcers, like smiles from parents, may have no reinforcing value; and other stimuli that should be reinforcers, like caresses and cuddling from parents, may have

even become learned aversive conditions. (I use values to encompass a person's reinforcers and aversive conditions.) So, it may be safer to talk about a child's autistic repertoire (behaviors) and his autistic values (reinforcers and aversive conditions). This may help us avoid unthinkingly adopting a simplistic medical/genetic/pharmaceutical model.

The term *disorder* may also tend to support a reifying medical model, implying that there is a disease called autism and it is a biological disorder. We would not say that the Skinner-box rat that has not yet learned to press the lever has a disorder, nor would we say that I who have not yet learned to speak Russian have a disorder, nor should we say that my tendency toward irony and sarcasm is a disorder, no matter how offensive it may be. These are all behaviors and values that have or have not been learned, just like the child's autistic behaviors and values that have or have not been learned.

Similarly, we might do well to ban *develop* from our psychological lexicon, with its suggestion that we biologically develop passively like a flower or a tumor. To say autism is a developmental disorder is like saying the rat's not learning to press the lever or my not learning Russian is a developmental disorder.

And the fashionable term *communication* may also get us in trouble. Even behavior analysts have a slight tendency to say every inappropriate, autistic act is the child's effort to communicate, to express his needs. So of course we must try to find out what the child needs, we must meet his needs; and, as a result, we end up reinforcing all sorts of autistic behavior that has nothing to do with needs but is merely an operant response reinforced by its consequence.

And professional behavior analysts may be taking one step backward with every two steps forward when they cater to this misleading expressive-communication model by calling the simple differential reinforcement of alternative behavior functional *communication training*.

No wonder so many people fell victim to facilitated communication—just a logical extension of the expressive-communication model.

We do a disservice to the important concept of *communication*, when we attempt to gain social validity by using *communication* to jus-

tify our basic behavior-analytic contingencies. We should not debase *communication* in order to give everyone, including ourselves, a warm feeling. We might do better to reserve *communication* for our much higher-level language-training goals.

CONCLUSIONS

I suggest that the Drash-Tudor contingency-analysis model of the etiology of autism (2004) is a major contribution to the fields of behavior analysis and autism, that we should not let political agenda interfere with our appreciation of its scientific and practical value, of its potential for both alleviating and preventing the profound suffering of families with children who have autistic repertoires, and that an understanding of the subtleties and complexities of behavioral contingencies should make it clear that the Drash-Tudor model in no way blames the victim (i.e., the family).

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