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The Organism as Host

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Abstract. The laws of behavior are primarily laws of responses rather than laws of organisms. Thus, they provide a technology for selecting those responses that are to serve as the organism's guests, and it is through this selection that many of the organism's characteristics and outcomes are determined. This concept of the organism as host to response guests creates a corresponding moral obligation to consider the selection of behaviors to reside within an organism in terms of their effects on the organism's later life. Certain candidates of widely useful or beneficial response classes are proposed. In addition, an example of cognitive ability is discussed in terms of its possible response components, to illustrate how an apparently 'active' organism may result from a strategic choice of response guests by the organism's teachers.

The modern student of psychology, at an early point in the curriculum, is exposed to the laws of learning. The paradigms of runway, maze, and Skinner box are presented, and the ubiquitous reinforcement operation which so thoroughly controls behavior in these paradigms is documented. An accompanying laboratory course allows the student to see the phenomenon directly. Inevitably, there will be a report by the student; inevitably, the report will claim, 'the organism was reinforced for ...'. If I am meticulous this day, I will interrupt, pointing out that *organisms* are not reinforced; responses are. By way of apology, I may also remark that it is not the student I have so rudely interrupted; it is only the statement. My respect for the student is undiminished; it is merely the statement that I mistrust. Often, the student is perplexed; why insist on one arbitrary phrasing over another? I note that the procedures that accomplish learning are, *in fact*, applied not to organisms but to selected responses of organisms; that the essence of response differentiation is reinforcing one response but not another; and that the essence of discrimination is that a response contacts reinforcement in one stimulus setting but not in another. Thus, it is not

Responses are reinforced, not the organism

the organism that is treated selectively, but rather the organism's responses; and it is not the organism that changes, but the responses.

Perhaps there will be a counterargument, to the effect that it is the organism who *performs* the responses. To this very reasonable claim, which will have the rest of the class displaying nodding responses, I can reply: 'How do you know? Once you placed the organism in the apparatus, you stopped dealing with it as an organism. From that point on, you dealt only with its responses. They occurred regularly under the control of your experimental contingencies, which tells you that the responses are lawful, not that the organism is. You don't know who performed the responses; you don't even know that responses are suitable to being "performed". Maybe "performance" is an inappropriate word. Maybe responses are existential.' 'Existential' is a word that tends to end such discussions, of course. Nevertheless, during the next class, I may very well hear my student report on several articles published by *Baer* which contain statements about reinforcing *children* for responses. This sets the occasion for several explanations: one admitting to the occasional literary clumsiness inherent in reporting that a response was reinforced; another suggesting that a little variation in phrasing makes any report more readable; a third ruefully pointing out that anyone can make a mistake; and a fourth admitting that the distinction is a fine one which may not have much function in some contexts. If the next query is: 'In what contexts does it have function?' then a very fine topic has been opened, which is, in fact, the present occasion.

When the laws of learning are stated as the principles of respondent and operant conditioning, they are statements about the control of responses through environmental contingencies. These statements need not specify the organism, and usually do so only implicitly. Yet, it is obvious that all responses occur in an organism. The student may remark tartly that when the organism is dead, the laws of learning are canceled. This is a telling statement of fact; it leads to the recognition that the laws of learning, if stated only as relationships between responses and the environment, are subject to qualification by certain parameters, one of which is death (a special case of which is health). The question is whether there are many such parameters to recognize, and whether they are parameters of the organism or of the controlling environment. Some may appear to be statements about the organism, yet resolve themselves into stimulus operations. For example, it may be argued that reinforcement depends on an organismic variable, specifically the deprivation state of the organism for the reinforcer in question. But examination of deprivation as a procedure reveals that it is a stimulus operation: it is the removal of the reinforcer in question for a period of time; or, alternately, it is the prevention of consummatory responses relevant to that reinforcer for a period of time. Then we are dealing not with a deprived organism, but rather with an absent stimulus or a prevented response. Does the arousal state of the organism determine behavioral interac-

Depriration: absent stimulus, or a prevented response.

ons with the environment? Very likely: but arousal is also a procedure that can be practiced in the environment; or, alternately, it is a certain pattern of ongoing behaviors, for example, those called 'awake'. We may know that an organism is awake, simply because it responds regularly on a temporal schedule of reinforcement well past its usual bedtime. In that case, we are dealing not with an aroused organism, but with one of its responses interacting with a reinforcement schedule. Do the instincts of an organism interdict environmental control of its responses? Perhaps so: but if the instincts are stated in terms of eliciting stimuli and elicited responses, then, once again, we have a statement not about the primal organism, but only about some of its responses and their controlling stimuli – and indeed, these may be some of the simpler stimulus-response statements that we will eventually make. Thus, using terms other than *deprivation, arousal,* or *instinct,* these parameters may be described environmentally or behaviorally, rather than organismically. In other words, we may be able to continue describing learning as only a set of relationships between behavior and the controlling environment, given a single parametric specification of the health of the organism. The result is a nearly organism-free science of the behavior of organisms, which is certainly a curiosity and a paradox, and not my recommendation for the most profitable discipline we might pursue.

Suppose instead a slightly different conception of the organism. For this organism, the laws of learning still hold, and they are statements about environmental control of responses, not about organisms. But if we can make those statements in their totality, they will imply a result in the form of an organism who contains the responses they explain. That organism is the dependent variable of the laws of learning that have been applied to the responses residing in that organism. The responses are the basic entities of this account. They lead lives of their own, dictated by their separate interactions with the surrounding environment, and by their interactions with one another, because, to a considerable extent, they are the surrounding environment of one another. However, they lead their own lives as guests of the organism; the organism is their host. It is not trivial to consider the organism as the host of its behaviors; indeed, my purpose is to argue that this conception has some important implications for ourselves that may be difficult to derive from other conceptions, yet have special value.

The first and perhaps most obvious implication is that organisms do not truly have traits. They have guests; but the guests can come and go as individuals. If an organism had a trait, it would behave in a number of similar, or logically connected ways, across a variety of situations that shared some common dimensions. But those behaviors are the individual entities in this conception; each of them is a phenomenon unto itself. There is no *integral* constraint on separate responses to organize themselves into groups. Each will do what *its* environment programs for it, according to the rules of conditioning. However, should the environment treat a number of responses alike, it would thereby

succeed in making a group, or class, out of them. As a class, they would indeed covary together, and the organism then would seem to behave in a variety of logically connected, predictable ways. But, if a class of responses can be made by common environmental action, it can always be unmade by differential environmental action. Any of its members probably can be separated from the class and left isolated, or be recruited into a different class. Thus, traits are artifacts of the environment: to the extent that the environment has been simple and uniform, an organism may contain a number of very large response classes, and thereby appear to be characterized by traits; but if the environment should happen to be very complex, thereby programming highly detailed, differential contingencies for individual responses, the organism containing those responses will be correspondingly difficult to predict and may evoke complaints from others about 'inconsistency'. However, those others who view the organism essentially as host will not complain: why blame the host for the varied lives pursued by the guests? The difficulty with the trait conception is that traits are arbitrary, impermanent, and constantly subject to whimsical variation. Worst of all, they tend to invite indefensible value judgments about the host organism, when the value judgments should be directed more precisely at the responses themselves. An organism out of whom emerge seven rude responses within an hour is not, thereby, a rude organism; perhaps it is an unfortunate one, to contain such active guests. But we should not discard the organism as being unsatisfactory, especially when it is possible to extract the rude guests selectively from the organism. A conception of the organism as host allows us to maintain our affection and respect for the organism, even while we are dismayed by some of the guests residing in the organism – after all, we know that those guests are readily modified by external events, whereas the organism is a structure that ought not to be tampered with as a structure. I suggest that it is the essence of human respect to value an organism even while planning the selective modification of its responses; and that it is the essence of disrespect to attribute to the organism the characteristics of some of its responses, thereby judging the organism as rude, perhaps, with no great consequences, but also, sometimes, as unintelligent, culturally deprived, delinquent, or a case of learning disability, all of which have massive consequences for the organism, mostly bad. Yet judgment of the organism could be obviated by modification of the relevant guests.

Perhaps my respect for the organism derives from the fact that I know almost nothing about how to modify it, and therefore am committed to it – especially my own – as *given*. On this basis, it is unacceptable to judge organisms, because nothing constructive can be done about negative judgments: bad organisms can only be avoided, segregated, or discarded. Guests, on the other hand, are subject to any amount of modification. In a naturally variable environment, various guests will be undergoing casual, unsystematic modification at all times; thus, it is relatively easy to consider a systematic, planned modification of

a selected few. In modern behavior analysis, it has been relatively easy not only to consider such modifications, but also to accomplish some of them. This leads to another implication: if the organism is host, and if the host's guests are readily modified, then we need a systematic understanding of the consequences *for the host* of having one set of guests rather than another. That is, we may query each potential response that comes under scrutiny, asking not only how it can be controlled by environmental events, perhaps as the outcome of some exquisite program of sequential learnings, but also, what effect on the host organism and on the other guests will the presence or absence of this guest response have? These questions will not often have hard and fast answers; they are not queries into the principles of nature, but rather into the current situation of the organism and its current roster of guests. In our case, they will usually be questions about our society, and the answers will be actuarial more often than universal.[1]

If there is a case of guests who will always be valuable to their host, perhaps it is the class that could be labeled health skills.[2] These would include diet choice, exercise, rest, sanitation, sheltering, and doctor-consultation behaviors, at least; and each of these is a modest response class in itself, rather than a single response. Most of these classes will have some universally appropriate function in maintaining the host organism, but doctor-consultation behaviors are obviously a function of time and place, in that there have been times, and are places, in which following the advice of the doctor may be more harmful than maintaining.

In a very busy, hurried, demanding, or competitive society, relaxation skills may well become a special case of health skills. An organism who possesses such guests may be able to work hard and be pressed, harassed, and competitive for a reasonable work week, and yet maintain good health, if frequent use of relaxation skills prevents the organism from continuing to stress its mechanisms for 24 hours a day, every day. Indeed, observers may judge that *this* organism is neither pressed nor harassed.

If there is another set of responses that approximates a universally useful class for any organism, it may be the class labeled as counter-modification skills. These would consist of a knowledge of behavior modification techniques, coupled with some useful methods of insulating the organism's response guests from the eager, if respectful attempts at changing them, emitted by other organisms. I have argued that responses are readily modified, and that we would do better to think in terms of those responses, selectively and individually, rather

[1] It will be recognized that these questions are essentially *ecological* ones. That behavior analysis is, or ought to be, a discipline thoroughly oriented toward ecological principles and problems, has been argued recently by *Willems* (1974) – an argument on which I have already commented very favorably (for the most part) (*Baer*, 1974).

[2] I am indebted to Mr. *David Thomas* for much of the content of this and the following paragraph.

than in terms of their host organism taken as an indivisible unit. But there is no way to guarantee that everyone who appropriately considers only our behaviors as targets for modification, meanwhile respecting us as organisms, will necessarily choose the best targets. Many of us will consider that our guests need no modification at all, and although we will value the respectful attitude of our contingency-wielding fellows who aim at only a few of those guests, we still may want to defend ourselves. I suggest that a modest ability to recognize contingencies as such is often sufficient to activate the very ordinary defense responses which prevent modification.

In some societies, a valuable addition to counter-modification skills may be those responses of finding a specific peer group, made up of hosts who contain social reinforcement responses just suited to the self-defender (i.e., to the self-defender's guests). In a society in which almost everyone disagrees with you, one way to preserve your current behavior (especially if your guests are not reinforced by disapproval) is to find those few hosts whose guests will reinforce your guests, and to recruit those hosts as your peer group. There is a class of social skills necessary to doing so; in some societies, those skills may take on remarkable importance.

Another nearly always useful set of guests is derived from the counter-modification skills just cited. These are contingency-outcome prediction skills.[3] An organism whose guests include symbolic responses will do well to gain some other guests, who, in league with the symbolic skills, will spend their time predicting the consequences of having yet other guests. In simpler terms, the prediction of what the long-term consequences of any response may be, is, in all logic, a salutary skill. Such prediction may lead to the conclusion that some valued guests are at risk, or that some undesirable guests are likely to move in, if certain behaviors (e.g., over-eating) are continued, given the contingencies of the current environment. This conclusion is itself simply another response. In the conception of the organism as host, it is the responses that are the primary events; thus, it seems inevitable that these responses may interact to determine whether other responses will increase or decrease, without violating the basic logic of the conception. In effect, certain responses evaluate others as potential guests, in terms of their value for the host organism. Consequently, maximizing or minimizing exposure to certain contingencies results. (I will return to this inter-guest interaction in subsequent discussion.)

Two other skills might be cited, not as universally useful to any host organism, but nevertheless as valuable to our current situation in this society. Here, it is always useful for a host organism to have a salable skill; and it is even more useful to contain a diversity of such skills. Otherwise, the host becomes subject

[3] In different ways, I am indebted to both Dr. *Jan Roosa* and Mr. *David Thomas* for much of the content of this paragraph.

to the whims of a single class of employers – sometimes, indeed, a single individual employer – and such a host is surely at risk in many ways.

The second nonuniversal response guest might be termed the abstain-from-controlling skills. They represent responses that note the opportunity to apply systematic contingencies to others, but advise refraining from doing so. They probably have little systematic value for the host organism in which they reside; but it may be that they are valuable to the society in which all hosts are members, and to future generations. The response of typically refraining from many possible opportunities to modify others' guests, if practiced widely amongst hosts, might make for a society within which diversity is tolerated and variety abounds. In such societies, it should be relatively easy to find the counter-modification peer group. These societies should also have survival value, if evolutionary logic has any application: as the environment changes, diverse societies have a better chance of containing within them the patterns that have become necessary for survival; thus, they may survive in at least a fractional degree, or their successful members may serve as a model for extensive imitation by other members.

Thus, it may be important to characterize the conception of the organism as host in somewhat different terms. This conception is not a necessary conception; it is not forced on us by our knowledge of behavioral mechanisms, but it is allowed by that knowledge. We may so view the organism if we wish. I have suggested here that there are certain advantages to doing so, that these advantages are (so far) primarily in the realm of respect for other organisms, and that they may not be so easily gleaned from alternative conceptions in which the organism is active and central. For, in such alternative conceptions, if there are individual differences among organisms, then they are likely to be attributed to the organisms; and to the extent that some differences are judged as undesirable, some organisms will be judged as undesirable.

This argument, clearly, is less scientific than social, less data-based than tactical. It has studiously ignored – so far – what I consider to be the most difficult argument against it, which is simply the existence of what may be termed abstraction behaviors. The display of abstraction behaviors, it is said, constitutes a logical argument which makes the organism-as-host conception an uncomfortable one, at least momentarily. As an example of this counterargument, consider the case of generalized imitation, of which virtually all of us are capable. This means that no matter what (reasonable) response is displayed before us, we can promptly emit the same response, or a very close facsimile. But to say that we imitate means that any guest response to which we are host may be mobilized immediately, simply by perceiving a model's display of the same response. If every response to which the organism is host can be entered into that organization of responses, then what is responsible for that organization? The question presumes that an organization of responses is something

more than the responses themselves, or that there was an agent of organization which is thereby something more – at least, something other – than the responses organized. Any 'something more', 'something other', or 'agent of organization' thus admitted may be postulated as the 'organism', but this is an organism that organizes its guests, rather than simply acts as their host. The organism-as-host conception argues that response guests may be organized by the external environment, or that *some of them may organize others of them.* Of course, if all of them become organized, there may be a certain reluctance to ascribe the organization to only the organizees; thus, an agent of organization other than the organizees becomes tempting to hypothesize, and for some theorists, impossible not to hypothesize.

Whether this logic is compelling, suggestive, or incompetent may be debated; alternatively, the same descriptive approach may be taken with abstraction responses that operant conditioning logic has taken with less-than-abstraction behaviors. Abstraction behaviors are always classes of responses, or response to classes of stimuli, or both. Taking this as inevitable, the same queries that have been made of simple responses and stimuli now may be made of response classes and stimulus classes; and the logical question of whether their existence demands the postulation of an agent to accomplish their class organization may be extinguished, rather than analyzed, proven, or disproven. Putting a logical inference on extinction is, of course, an arrogant thing to do. However, it is possible that a very fruitful line of research into abstraction behavior will result, if abstractions are innocently treated as if they were quite ordinary responses. It may turn out, for example, that they uniformly obey the same principles as do simple responses, thereby matching their investigators in innocence.[4] Thus, extinction of the logical implications of the facts of abstraction may result in a better analysis of abstraction, as well as a technology of teaching abstractions aimed at the betterment of hosts, especially very young ones. This may well prove more fruitful than would any amount of puzzling over what the organism must be, given that it is capable of abstracting.

At this point, retreat to a concrete example may prove illuminating (as well as exemplary of the tactic at issue here). Suppose that the problem is to train profound and severe retardates in the use of language skills, which, prior to training, they are devoid of. My colleagues and I have been at that task some 10 years now, and have sketched a potential teaching program for accomplishing some of that goal (*Sailor et al.*, 1973; *Guess et al.*, 1974). An early step is to train each child to label some 16 different common and useful objects by their common and useful names. That is readily accomplished by ordinary operant

[4] For example, *Baer et al.* (1967), taking the quite innocent view that generalized imitation (the key example of this discussion) was teachable as if it were itself simply a response, succeeded in doing so.

discrimination techniques, such that the sight of each object, coupled with the teacher's query: 'What's this?', is sufficient to evoke a correctly spoken label every time. The child now has 16 new guests, each closely responsive to a set of events in the outside environment. May these 16 guests be organized to influence the function of two other guests, specifically, the responses 'yes' and 'no'? In particular, can we establish 'yes' as the answer to all questions of the form: 'Is this *(label)*?', in which the label stated is indeed exactly the name of the object which is presented with the question? And can we similarly establish 'no' as the answer to all questions of the form: 'Is this *(label)*?', in which the label stated is definitely not the name of the object presented with the question, but instead is one of the other known labels? On the face of it, this may seem to require simply the recruitment of two more guests: 'yes' and 'no'. However, to accomplish the goal 'yes' and 'no' must be responsive not only to certain outside events, but also to the 16 guests which represent the already known labels of objects in this outside environment. Thus, when an outside object is presented to the child, one of these 16 guests is to step forward as the correct response to this object; 'yes' should occur only if there is a match between the guest stepping forward and the label just heard in the trainer's question. Thus, if the trainer presented a ball, the guest 'ball' would have stepped forward in response; if, in addition, the trainer had said: 'Is this ball?', then the match between the organism's guest, 'ball', and the trainer's heard 'ball' is the stimulus event which should control 'yes'. However, if the guest who steps forward in response to the object presented does not match the trainer's spoken label – if the trainer had presented a ball, but had asked: 'Is this cup?', then the mismatch between the organism's guest, 'ball', and the trainer's heard 'cup' is the stimulus event that should control 'no'. What the organism needs, to be an accurate user of 'yes' and 'no', is not simply two additional guests ('yes' and 'no') but three: 'yes', 'no', and a set of match-to-sample skills capable of handling auditory events of the type that the 16 label-guests present. My colleagues and I have a very small amount of data which suggest that the following teaching program, or one similar to it, can succeed in establishing just such guests functioning in just these ways. Although the program may seem more complex than the logic just sketched, I suggest that, in fact, it represents nothing more than the installation of three additional guests ('yes', 'no', and match-to-sample) to accompany, and be organized by, the 16 label guests already recruited. Yet, these three additional guests, properly responsive to both the external environment and their 16 fellows (who themselves are responsive to some of the same events of the outside environment), will transform an organism who is merely a labeler into one who is also a truth teller (within the current limits of his repertoire – his guest roster – of course). (Quotation marks index experimenter statements; italics index child responses. It is assumed that this program is begun after the child has learned 16 productive labels, including those indexed below as object 1, object 2, etc.).

(a) Present object 1, and say: 'What's this?'; train the response *(label 1)*.

(b) Present object 2, and say: 'What's this?'; train the response *(label 2)*. Mix steps a and b in random order, train until criterion is reached. (This is a refresher sequence; it should go quickly.)

(c) Test: present object 1, and say: 'Is this (label 1)?'; train the response *yes;* present object 2, and say: 'Is this (label 1)?'; train the response *no;* present object 1, and say: 'Is this (label 2)?'; train the response *no;* present object 2, and say: 'Is this (label 2)?'; train the response *yes*. These 4 components of step c should be trained in random order. Experience firmly suggests that this step will fail with the great majority of children who need to be taught labels. Thus, step c is a test establishing the need for the program which follows, beginning with step d.

(d) Say: '(label 1)! (label 1)?': train the response *yes;* say: '(label 1)! (label 2)?'; train the response *no*. Repeat step d with various of the known labels in various orders of match and mismatch; continue until criterion is reached with each combination.

(e) Present object 1, say: '(label 1)! (label 1)?'; train the response *yes*. Present object 1, say: '(label 1)! (label 2)?'; train the response *no*. Repeat step e with various objects and labels, as in step d.

(f) Present object 1, say: 'What's this?', evoke *(label 1)*, approve, say: '(label 1)! Is this (label 1)?'; train the response *yes*. Present object 1, say: 'What's this?', evoke *(label 1)*, approve, say: '(label 1)! Is this (label 2)?'; train the response *no*. Repeat step f as with steps e and d.

(g) Present object 1, say: 'What's this?', evoke *(label 1)*, approve, say: 'Is this (label 1)?'; train the response *yes*. Present object 1, say: 'What's this?? ', evoke *(label 1)*, approve, say: 'Is this (label 2)?'; train the response *no*. Repeat step g as with steps f, e, and d. If difficulty is encountered, omit the approval, thus bringing the child's (label 1) into closer proximity to the experimenter's (label 1) or (label 2) response. If this succeeds, reintroduce the approval later, fading it in. Although formally unnecessary, it should help teach the child to respond without tight proximity between the two (labels).

(h) Present object 1, say: 'Is this (label 1)?'; train the response *yes*. Present object 1, say: 'Is this (label 2)?'; train the response *no*. Repeat step h as with steps g, f, e, and d.

I predict that step h will prove a successful training now, whereas it failed as step c. (Note that steps c and h are identical.)

The children who master this program not only can label 16 objects of their environment; they can also truthfully say whether someone else is labeling them accurately. Because of this, they may seem to be at a different develomental level than children who could merely label the same 16 objects, and this will be especially true if their 'yes' and 'no' utterances can be generalized to any new labels they may acquire for any objects they may encounter. Yet, according to this analysis, their gain has been only one new response: a generalized match-to-sample skill for auditory events like object labels. In this conception, that skill is merely one more guest (albeit an impressive one, being generalized across a fair sample of phonemes). This guest interacts with the other 16 guests, and with the two simple 'yes' and 'no' guests, to accomplish an outcome which an observer will consider as evidence of a simple concept of truth and falsity. As argued earlier, this evidence may, for some theorists, justify the postulation of an 'organism' that organizes guests into abstractions; but the example is more

economically interpreted as the organization of certain guests *by another guest.* Whether the example has sufficient generality to serve as a model for the great variety of abstraction behaviors which organisms display is, of course, the critical question. The current example does not establish its generality; but surely it invites a great deal more empirical analysis of the same sort, in an effort to evaluate the possibility that it is indeed a very general paradigm. The outcomes of this research seem mandatory, before further argument can be very fruitful, in my opinion.[5]

Thus, the organism-as-host conception again is seen as a tactic, this time for possible scientific gains in the form of more valuable research than might be produced by alternate conceptions. Whether, in fact, it is the superior tactic can be seen eventually, as the results of scientists pursuing one conception become more available for comparisons with the results of other scientists pursuing another conception. Meanwhile, the organism-as-host conception has one unfair advantage: who can argue against hospitality?[6,7]

[5] Note that the ability to match-to-sample with auditory stimuli is not a trait, but only a response. As such, it is of course open to stimulus control: that is, it may operate only when the correct environmental events are present to act as discriminative stimuli. Good teaching would of course recommend that we attach this skill to as many environmental events as possible so that it would be available to its host organism no matter where the organism might find itself. However, especially in its early stages, it might well prove to be the case that the match-to-sample skill is tightly controlled by the stimulus events of the teaching setting – the teacher, the room, the stimulus objects displayed, the reinforcers used, etc. In this case, the child's developmental level would seem unstable or inconsistent: given the nature of the environmental cues available, the child might seem at a higher developmental level at one moment (capable of truth and falsity judgments), and at a lower one the next (incapable of them). This ability to control the developmental level of the child, merely by controlling the salient cue supplied by the environment, may seem a contradictory one to some theorists. A developmental stage, it may be argued, is a consistent attainment. But the point here is that stimulus control of a critical skill in such developmental advances is not an oddity, but the commonplace; and that such control comes on a continuum between tightly localized in time-and-place to widely available in time-and-place. Any of the child's skills may operate anywhere on this continuum.

[6] The conception presented here is in no sense a novel one, yet it has proven difficult to credit to a predecessor. The obvious source is, of course, *B.F. Skinner;* this logic is implicit in a number of places which have evaded my memory. Thus, the absence of *Skinner*'s works from the reference list to follow is, in fact, the most thoroughgoing possible credit to his works – they *all* apply.

[7] I am grateful to Dr. *Stephanie Stolz* of NIMH who, because of my illness at the time, read this paper for me at the 1974 meeting of the Eastern Psychological Association. Indeed, she also was forced to improvise the final example of this paper (the 'yes/no' program), then not yet written, on the basis of one telephoned explanation (and did so perfectly, according to those present). In addition, she edited the paper before presenting it, in ways I have been pleased to accept, but of course she cannot be blamed for the current argument.

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