Self-Knowledge as Interbehavior

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Abstract

Behavior analysts have said relatively little about the topic of self-knowledge. In this paper we describe an interbehavioral conceptualization of knowledge, including self-knowledge. In providing our analysis we first describe foundational aspects of the interbehavioral position which are pertinent to our approach. We then describe knowing as a psychological event, and finally self-knowing. It is argued that the interbehavioral position offers a comprehensive and coherent alternative to radical behaviorism, and is especially useful in the analysis of complex behavior.

Keywords: *interbehaviorism, knowing, knowledge, self-knowledge, stimulus substitution.*

Resumen

Los analistas conductuales relativamente han dicho poco respecto al tópico del conocimiento de sí mismo por lo que en este trabajo describimos la conceptuación del conocimiento y del conocimiento de sí mismo. Para plantear nuestro análisis, en primer lugar describimos los aspectos funcionales de la postura interconductista que son pertinentes a nuestro objetivo: describir al conocimiento como un evento psicológico y finalmente al conocimiento de sí mismo. Se argumenta que el interconductismo provee una alternativa comprehensiva y coherente ante el conductismo radical además que es especialmente útil en el análisis de la conducta compleja.

Palabras clave: *interconductismo, conocimiento, conocer y sustitución de estímulos.*

Self-knowledge is an important, yet understudied topic in behavior analysis. In our view, self-knowledge is related to a critical issue in behavior analysis, especially radical behaviorism, namely, the analysis of so-called "private events". The authors have been considering the analysis of private events in behavior analysis for many years (e.g., Parrott, 1983c, 1986; Hayes and Fryling, 2009a), and have arrived at an unconventional position with respect to the admission of private events into the more general class of events considered by behavior analysts. As this position remains unconventional, and less well understood than many alternatives, we briefly describe the fundamental elements of our approach in the following paragraphs. After describing this position we analyze the concept of knowledge, and finally self-knowledge, from our unconventional interbehavioral perspective.

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Private Events

In our view the admission of "private events" in the analysis of behavior is an outcome of philosophical shortcomings within the system of radical behaviorism. Our interbehavioral position demands that we specifically articulate our philosophical assumptions, including subject-matter definitions, and as a consequence of this, a number of conceptual inconsistencies and inadequacies are avoided (see "system construction", Kantor, 1958; also see Clayton, Hayes, and Swain, 2005). Specifically, Kantor conceptualizes disciplinary sciences as scientific systems, and evaluates those systems on the basis of their validity (internal consistency), significance (external consistency, or coherence within the larger field of the sciences), and comprehensiveness (the extent to which those systems cover the range of events which fall under the purview of the subject-matter). While far beyond the scope of the current paper to repeat the details of our analysis, we outline its fundamental aspects in the following paragraphs.

First, from our view disciplinary sciences are successful and contribute to the body of knowledge in the sciences by virtue of their identification of a unique subject-matter. For example, the extent to which psychological science contributes to the body of knowledge in the sciences depends, in part, on the identification of a psychological subject-matter that is distinct from those of other sciences, for example biology and sociology. Importantly, this is not to say that the world is comprised of subject-matters, or that independent subject-matters exist in nature. Rather, our interbehavioral position assumes that the world is comprised of one whole, one matrix of natural happenings. Our efforts to understand this whole must necessarily involve constructing aspects of it, and these constructs are disciplinary subject-matters. What is then learned about one subject-matter pertains only to that subject-matter. As the sciences cumulate progress, more and more of the world is understood, and interdisciplinary endeavors become more likely. Still, an interdisciplinary study does not involve blending disciplinary subject-matters into one, or overstepping disciplinary boundary conditions. For example, at no point is psychology to be reduced to biology, nor blended with the subject-matter of sociology. Rather interdisciplinary science involves the investigation of relationships among the participating disciplinary subject-matters (see Hayes and Fryling, 2009b).

Related to the above, in a recent paper on this topic we have argued that the problem of privacy in the analysis of behavior is a "pseudo-problem" resulting from the problematic distinction between psychological events on the basis of which side of the organism's skin they are considered to be taking place (Hayes and Fryling, 2009a). This dichotomy, between events that occur outside the skin and events that occur within the skin, has been described at length by Skinner in his seminal writings on the topic of private events (Skinner, 1953, 1957, 1974). In our view, to suggest that psychological events of *any* variety are taking place within the skin of the behaving organism is indicative of a lack of clarity as to the events comprising the unique subject matter of our particular science – namely interactions on the parts of *whole organisms* with stimulation on the parts of environing things and events (Hayes and Fryling, 2009a).

In other words, if a psychological event is to occur within the skin of the organism, as suggested by Skinner, it must be an event that could possibly occur in this location. However, events occurring in this location necessarily involve interactions among organs and other biological components of the organism, and thus the suggested involvement of psychological events in this location assumes interactions of a wholly organismic sort. More plainly, in order for anything "within the skin" to be considered in the science of psychology, psychological events must considered wholly organismic phenomena. However, acts of whole organisms are not, by themselves, psychological events. Psychological events are not wholly organismic phenomena; psychological events are *relations* in which the

response of the whole organism is an analytical part. What cannot be overlooked in this relation is the stimulating action of the environment. Taken together, *a psychological event is a relation obtaining between the responding of a whole organism and the stimulating of an environing thing or event.*

Added to this, the responding of the whole organism is not merely the summation of biological happenings involved in a particular response. The conceptualization of the whole organism responding serves to *distinguish* psychological events from biological events. In fact, this construction is valuable to the discipline of psychology in that it serves to prevent the reduction of psychological events to biological events. Considering our earlier comments, the identification of a unique subject-matter involves eliminating confusion as to its reducibility to other subject-matters. This is to say, events within the skin are not uniquely psychological, but rather, biological in nature. Kantor has commented on the tendency of psychologists to reduce psychological events to biological events.

As Kantor puts it:

> *Psychological events involve the participation of total organisms, not merely special organs and tissues. In contrast with the classical assumption that psychological (psychic) events are processes correlated with particular organs (localized of function), interbehavioral psychology assumes that the activities of the total organism are always involved in such events. Specifically, this means that no organ is primary to or in control of any other organ. Interbehavioral psychology does not attribute greater importance to any one structure than to any other, whether it be a cerebral or glandular organ or system" (1958, p. 79).*

Skinner also recognized and cautioned against the lure of biology as an explanation for psychological events, as the following quotation reminds us:

> *When a science of behavior had once rid itself of psychic fictions it faced these alternatives: Either it might leave their places empty and proceed to deal with its data directly, or it might make replacements. The whole weight of habit and tradition lay on the side of replacement. The altogether too obvious alternative to mental science was a neural science, and that was the choice made by a non-mentalistic psychology. The possibility of a directly descriptive science of behavior and its peculiar advantages have received little attention (1938, p. 5).*

Unfortunately, this realization did not prevent Skinner from later promoting the notion that an understanding of psychological events, including the *identification* of events of the private class, would arrive, eventually, in the hands of the physiologist of the future (Skinner, 1974, pp. 236-237). Some forty years later, and for good reason, we are still waiting on this "eventuality". More plainly, Skinner too resorted to abandoning an authentic science of behavior *in its own right*, and instead speculated that another science, physiology, would eventually tell us all that is happening during behavior change. In other words, behavior analysts have resorted to reducing psychological events to biological events in their conceptualizations of so-called private events. As the saying goes, "one day private events will be made public". Of course, when and if such events *are* ever made public, we will be obliged to ask what those events are. For one, they will no longer be private, rendering the discussion of private events to be meaningless. For another, they will be biological, meaning they will be better conceptualized as the subject-matter of another science. In both cases, the consideration of so-called "private events" *as* private events is of no value for the science of behavior. In sum, the identification of a unique subject-matter is central to disciplinary progress, and the absence of an adequate subject-matter definition invites reductionism (also see Observer, 1969). In our view, behavior analysis has been lured into this practice.

Thus far we have described how the lack of clarity regarding the subject-matter in behavior analysis has involved reductionism and is based upon the faulty dichotomy between the behavior occurring within and outside of the skin of the organism. Specifically, the system of radical behaviorism has fallen in to the practice of reducing psychological events to biological events, especially in the

consideration of events which are "private". Again, it is likely that reductionism will remain as the inadequacy of the subject-matter definition continues to be experienced by behavior analysts, perhaps especially as the discipline develops and considers more complex behavior. Alternatively, those committed to Skinner's analysis will be required to re-interpret his analysis more and more; they will be required to change it.

An unfortunate by-product of the public-private dichotomy proposed by Skinner is that it has obstructed progress toward an understanding of those events assumed to be private. Specifically, the assertion that private events are indeed private, and therefore unavailable for study, prevents us from learning anything about them. This therefore leaves behavior analysis lagging behind other approaches to the subject-matter; if there are always some events which are left unavailable for study, behavior analysis will always be an incomplete science. Simply saying that some events are "private" doesn't seem to do them justice. In other words, we don't learn anything about those events, or understand them in any new way when they are considered private. Surely, the extent to which behavior analysis continues to lag behind other psychological perspectives, irrespective of their inadequacies, has something to do with the lack of a behavior analytic contribution to the understanding of topics such as thinking, imagining, remembering, knowing and feeling.

The Psychological Event

We have described an alternative means by which so-called "private" events may be conceptualized (Hayes and Fryling, 2009a). Our position is largely influenced by J. R. Kantor's interbehavioral psychology (1958), and in particular, his construction of the psychological event (PE). First, interbehaviorists conceptualize stimulation and responding as a reciprocal function, an interaction, and often use double-headed arrows to depict this event (sf←→rf). This is to say, stimulation cannot occur in the absence of responding, and responding cannot occur in the absence of a stimulus. This is in contrast to the common linear sequence favored by many behavior analysts, where the discriminative stimulus sets the occasion for the response, and the response is then selected (or not) by changes in the environment. Furthermore, stimulation, as a psychological function, is distinguished from stimulus objects, and responding, as a psychological function, is distinguished from the responding organism (i.e., the locus of responding). Thus, a stimulus object (e.g., a picture) is generally not of interest to the interbehavioral psychologist; rather, the stimulus functions of the picture are emphasized.

The distinction between stimulus objects and stimulus functions, as well as the responding organism and response functions, is a rather distinct feature of interbehavioral psychology, especially when compared to Skinner's Radical Behaviorism (Parrott, 1983b). Kantor (1921, 1924) suggests that stimulus objects might develop the stimulus functions of other objects, even when such objects are currently absent from the physical environment, by virtue of an individual responding with respect to historical spatio-temporal relations among those objects. In other words, factors which occur together in space and time, might develop the stimulus functions of one another, assuming an individual responds with respect to this relationship. When one stimulus develops the stimulus properties of an absent stimulus, Kantor suggests that the present stimulus is substituting for the absent stimulus, and uses the term *stimulus substitution* to describe this occurrence (1924, pp. 50-51). Thus, a particular person, as a stimulus object, might substitute for a range of experiences (e.g., a person might develop the functions of aversive experiences one has had with that person), and these functions might also develop by virtue of physical similarity (e.g., a person who looks similar to the person with whom aversive experiences were

associated might also substitute for the aversive experiences). These processes are similar to both classical conditioning and stimulus generalization.

Kantor also addresses the response side of the substitutional interaction, and does so with the term *implicit responding* (Kantor, 1926). Generally, implicit responding involves responses with respect to substitute stimulation. For example, upon visiting an old neighborhood we might *see* old friends, despite their physical absence. In this example stimuli in the old neighborhood substitute for the individuals that were present in that setting, such that the neighborhood, psychologically speaking, *is* those individuals. When we *see* those individuals this responding is implicit in nature. We may also hear and feel in the absence of the stimulus object as well, all through substitution. Indeed, much of our behavior is of the implicit sort, whereby we respond to a plethora of physically absent factors by virtue of their relational history and subsequent substitutional presence in the current environment (also see Hayes, 1992).

Fully understanding stimulus and response substitution has large implications for the analysis of behavior. However, stimulation and responding occur in a complex interbehavioral field. In interbehavioral psychology the Psychological Event is represented by the following formula (Kantor, 1958): PE = C(k, sf, rf, st, hi, md). *PE* represents the psychological event, *C* the fact that the event is one whole, one event, *k* the uniqueness of each and every event field, *sf* stimulus function, *rf* response function, *st* setting factors, *hi* interbehavioral history, and *md* the medium of contact. In other words, stimulus and response functions participate in multi-factored fields. As such, historical (*hi*), situational (*st*), and other factors participate in the functioning of stimuli and responding. For example, extensive relational histories with particular stimuli, and in particular situations, might participate in specific substitute stimulation and implicit responding. Furthermore, given a rather elaborate or intimate interbehavioral history with respect to an individual (e.g., in various circumstances, listening to them talk about various events and situations in great detail), we might actually *see* what they are thinking and feeling (see Hayes and Fryling, 2009a). Indeed, events which are typically considered "private" in behavior analysis may be conceptualized as wholly observable in principle by virtue of stimulus substitution.

Thus, with respect to events that are typically considered "private", we have suggested that events of these sorts, while subtle in nature, are responses of whole organisms with respect to environing stimulation, occurring in the same fields of interaction as psychological events of all other varieties. The subtlety of these events is the product of two factors, an individual's history of responding with respect to relationships, and the substitute stimulus functions involved with such histories. Moreover, we have suggested that while such events might be difficult to observe in practice, they are in fact wholly observable in principle, given the necessary observational history. Were the interbehavioral perspective to be adopted, the apparent need to talk about private events would be removed, as *all* events would be conceptualized as public.

In our experience our position can be difficult for audiences to grasp, as it is rather unconventional. It is unconventional in that *all* influences of reductionism and dualism are thoroughly removed. There is *nothing* psychological that cannot, in principle, be observed. Further, there is *nothing* psychological which requires a biological description. Rather, *all* psychological events are available and *all* psychological events can be explained at a *psychological level.* The implications of our perspective impact the way in which behavior analysts approach a wide range of complex behavior in particular. One area which might be reconsidered in light of our interbehavioral position is knowing, including self-knowledge. In the following sections we describe an interbehavioral treatment of knowledge and self-knowledge, and contrast it with the more traditional, Skinnerian approach.

Knowing

It is commonly assumed that ones knowledge about the world determines how one acts in the world. Given this, it is reasonable to assume that an understanding knowledge has a number of possible practical benefits. From Skinner's (1969, p. 186) perspective, an understanding of knowledge might help us develop more effective means to develop knowledge, and our efforts to develop knowledge might in turn further strengthen our understanding of what knowledge is (p. 186). In other words, if knowledge is assumed to cause behavior, then understanding how to develop knowledge seems to be an important practical aim.

Historical interest in the nature of knowing has not been centered on practical considerations, though. Indeed, the concept of knowledge is frequently employed to account for behavior which seems to be too complex or too well integrated to be the result of current stimulation. The concept of knowledge has been a means by which current behavior may be attributed to historical variables. Moreover, as variables cannot have a controlling influence in a situation in which they are not present, which is the case of historical variables by definition, the problem of knowledge has been one of finding a means of conceptualizing an organism's past as an aspect of the current situation (Parrott, 1983a). More plainly, knowledge has remained a theoretical problem for psychologists, as it is not clear how the past can be conceptualized as an aspect of the present circumstance. The topic of knowledge has been pursued in a variety of ways, some more meritorious than others.

One approach to the problem of historical control over current behavior involves converting the organism's history of interactions with its current environment into a possession of the organism. This is to say, knowledge is conceptualized as a presumably massive collection of copies of an organism's past experiences. Skinner (1974, pp. 89-90; 1978) has had much to say about this topic. Generally, Skinner criticized the idea that we don't actually respond to the world, but rather internal copies of the world, on the grounds that such copies are entirely invented and bring us nowhere as far as a behavioral analysis goes.

By contrast, Skinner (1953, p. 409; 1974, p. 138, 142; 1978, p. 105) solves the problem of making the past an aspect of the present by suggesting that knowledge is possessed as a repertoire of behavior. Importantly, the concept of a repertoire does not imply storage of anything. Rather, Skinner uses the term repertoire to describe the changes in an organism, presumably biological in nature, brought about by its history with particular contingencies of reinforcement.

Skinner (1968, p. 204) explains:

> *The experimental analysis of behavior has no need for a concept of memory in the sense of a storehouse in which records of variables are kept and later retrieved for use. An organism is changed when exposed to contingencies of reinforcement and survives as a changed organism.*

Thus, Skinner solves the problem of knowledge by suggesting that the past is made present in the changed organism, and therefore knowledge is whatever the organism is capable of doing. Specifically, Skinner (1974, p. 363) states, "it is potential behavior which is called knowledge". Presumably, this "potential behavior" becomes actual behavior when the "changed organism" encounters situations like those which caused the change in the repertoire, the change in the organism, in the first place.

Other aspects of Skinner's analysis of knowing and knowledge are much more extensive than is possible to report here, including its distinctions between knowledge as action and knowledge short of

action, contingency shaped and rule governed knowledge, and so on (Skinner, 1953, 1969, 1974). However, it is the means by which the organism's past interactions with its environment are brought into the effective present that is of interest. Again, Skinner's strategy here is to suggest that the organism is changed, biologically, by contingencies of reinforcement, and that these changes are then what determine subsequent behavior change. Of course, a concern with Skinner's analysis is that these biological changes are hypothetical. In fact, we are at as much of a loss to find support for Skinner's "changes in the organism" as we are the mentalists' "storehouses in the brain" (Hayes and Fryling, 2009a; Parrott, 1983a). Moreover, were we able to observe such biological changes in the organism, through advances in technology, the problem of knowledge would still be unsolved. Specifically, such changes in the *biology* of the organism comprise the proper subject-matter of *biology*, and not psychology. In other words, we are left without a behavioral analysis of the topic of knowledge. Again, given our commitment to provide a *psychological* analysis of the topic, one which doesn't involve dualism or reductionism, Skinner's solution to the problem isn't much of a solution after all.

Our aim in making these claims is not to be critical of Skinner *per se*. Rather, it is to better understand what knowing amounts to, and as we see it, no search for hypothetical organismic events, be they copies or changes in the organism, will be profitable in this regard. Moreover, even if biological changes *should* be found, they will pertain to *biological* changes, rather than *psychological* changes. The only way to understand psychological events, including knowing, is to focus our attention on psychological events themselves. So, let us now turn to the analysis of knowing as a psychological event.

Knowing as a Psychological Event

To review, from Kantor's (1958) interbehavioral perspective, a psychological event is the responding of an organism with respect to the stimulating of an environing event, occurring in a setting of many other factors. More specifically, from the perspective of interbehavioral psychology, each psychological event consists of stimulus and response functions, setting factors, interbehavioral history, and media of contact; and all of these factors are interdependent. This is to say, none of these factors are thought to be more or less important or causal than others. Rather, all of the above mentioned factors have participatory roles in the psychological event, whereby the alteration of one such factor results in the alteration of the entire psychological event. As such, knowing is also a matter of responding with respect to stimulation, along with the setting in which it is occurring.

To elaborate, not all responses with respect to stimulation are the same, however. Responding may occur with respect to stimulating arising from the natural properties of stimulus objects, whereby its formal properties are conditioned by the formal properties of those objects. For example, a cup cannot be picked up by a touch of a finger, it must be grasped in such a way as the physical properties of the cup require; this is determined by the physical properties of stimulus objects. Responding may also occur with respect to the attributed properties of stimulus objects, whereby stimulus properties are not conditioned by the formal properties of the stimulus object but are rather acquired under the auspices of a particular group. For example, responding to a cup by saying "cup" or the Spanish "la taza" has nothing to do with the formal properties of the cup. Rather, responding of this sort is cultural, and, for the most part, verbal (Hayes and Fryling, 2009b; Kantor, 1982). In other words, cultural stimulus functions are arbitrary, and as such involve verbal behavior. Finally, responding may occur with respect to stimulation acquired by stimulus objects by virtue of their stimulating properties having occurred in proximal relation to the stimulation arising from other objects in an organism's history. This sort of happening is exemplified when the dog salivates to the bell in the classic Pavlovian paradigm, but it is by no means limited to stimulus arrangements of this type. As we have described earlier, all acts of remembering, thinking,

imagining, and knowing, exemplify the operations of substitute stimulation, and the conditions of association under which substitution arise vary widely (see Kantor, 1924). How an organism responds to stimulation is, in other words, a complicated affair.

These complications are a matter of history and setting. As a matter of history, a given stimulus object becomes a source of multiple original and substitute stimulus functions – which is to say a multitude of responses may occur with respect to the same or similar objects. Likewise, similar responding may occur with respect to stimulation arising from a multitude of different source objects. And, in so far as we are constantly responding with respect to stimulation, these relations are multiplying continuously throughout our lifetimes. More plainly, stimulation becomes more and more complex as our histories become more and more elaborate.

With this understanding, the question becomes: How is it that we respond as we do in a given situation? It is tempting to say that what occurs in a given situation is *possible* as a result of one's history, however vaguely described, but it is *determined* by the setting. In other words, in having denied the causal status of the stimulus by virtue of having described the psychological event as an interaction of responding with respect to stimulating, the setting emerges as a possible candidate for causal efficacy. Indeed, it is tempting to say that the setting *selects* the interaction of responding and stimulating that takes place from among the many that a history would suggest are possible. However, the setting is not independent of the event for which it is said to be causally responsible. On the contrary, the setting is an integral aspect of that very event; it can hardly be said to be responsible for the event in which it is also a part. Still, the setting cannot be ignored. A stimulus object is home to multiple stimulus functions, some original in the sense that they arise from the natural properties or conditions of the stimulus object, some cultural in the sense that they are arbitrarily attributed through verbal processes, and some substitutive in the sense that they are present by virtue of past proximal contact with other objects. How we respond in a given circumstance comports with the setting. The setting is a *participant* in each psychological event.

So let us now deal with knowing as a specific type of responding with respect to stimulation. What does it mean to know something? In this regard, Skinner (1974) distinguishes knowing *how* from knowing *about*. One knows how to ride a bicycle if, given a bicycle, one can engage in effective action with respect to it. From this perspective, to know is simply to do, the efficacy of the doing being a matter of historical contact with the thing in question. By contrast, knowing about something implies multiple forms of behavior with respect to that thing. In Skinner's (1974, p. 138) words, "We know about electricity if we can work successfully, verbally or otherwise, with electrical things." Given that knowing how to ride a bicycle presumably involves multiple forms of behavior with respect to bicycles, we don't find this distinction particularly useful. And, as it turned out, neither did Skinner. In the end, knowing is akin to awareness or consciousness for Skinner: To know something is to be able to talk about it.

Kantor (1924, p. 396) came to roughly the same conclusion about knowing. From his perspective, to know something is to engage in implicit orientational activity with respect to it, and orientational acts are accomplished primarily through verbal behavior. Specifically, an individual becomes knowledgeable about a stimulus object when they talk about that object, and when talking about a particular stimulus object, a relationship between the object and the responding of the knower is established. (p. 397). While all psychological events involve relationships among the responding organism and the stimulating environment, what makes "knowing" interactions unique is their involvement of verbal behavior. To Kantor, knowledge as orientation involves the relationship between the responding organism, the knower, and the stimulus object, the thing known.

Two additional clarifications of knowing defined as implicit orientational activity need to be made here. First, the mention of "implicit" in this definition implies that orientational activity occurs with respect to substitute stimulation, as previously discussed. This is especially important when matters of time are involved, as when one talks about the past or future. In other words, the past and future only exist through substitutional processes. Specifically, the past is made present by virtue of spatio-temporal relationships among various factors, with the outcome being that the present environment substitutes for the past (i.e., the past *is* present; Hayes, 1992). The future, however, is made present by virtue of verbal behavior about the future; which is actually verbal behavior about the present. Secondly, orientational activity constitutes action short of an effect on the object with respect to which one is orienting. Kantor and Smith (1975, p. 212) explain:

> *Popular belief has erroneously divided off knowledge from action. Before we study psychology we think behavior as exclusively effective – namely, interactions in which we manipulate something, pick up an object, tear it, or otherwise bring about some definite effect. This is a mistake. Much human behavior consists of action which results in no change in the things with which a person interacts. He merely orients himself to them.*

By contrast, Skinner (1957) is inclined to dismiss actions of this sort as hypothetical intermediate conditions. In his view, knowing that the phone is out of order is not a matter of so called orientational activity, for example. We know the phone is out of order when we don't try to use it. This is not to say that orientational activity is never accompanied by overt action in Kantor's view, just that when such action does occur it is a different behavior segment. That is, knowing is a distinct psychological event itself, which may or may not correspond to other behavior.

Self-Knowledge

With these clarifications at hand, let us turn to what it means to know oneself. The simplest form of what we might call "knowing one's self" is describing stimulation arising from aspects of our current interactions or bodily conditions as stimulus objects. We can describe our actions as loud or repetitive, for example. We can describe our bodies as having disfigurements of sorts, as in the case of a bruise or a rash or broken tooth. We do so as we would any other aspect of our immediate environment. As Skinner (1953, 1957, 1974) has outlined, we can learn to describe aspects of our bodily circumstances that are not accessible to external observers, however poorly.

But what about knowledge of our past or future interactions? As a way of saying that behavior analysts have not dealt with these issues in a particularly helpful way, a quote from Skinner's (1974, pp. 26-27) analysis as to what one is responding with respect to when speaking of one's past behavior exemplifies our concerns:

> *Answers to such questions as "What did you do yesterday?" or "Whom did you see?" can use a vocabulary acquired in conjunction with current behavior. A person simply speaks from a special vantage point: he was necessarily there.*

This statement is not helpful. To know one's past is not a matter of having been there. We do not know the past as the past, but instead only as an aspect of the present circumstance (Hayes, 1992). It is in the complexity of this circumstance, which is continuously increasing, that we find what we ordinarily think of as the past and what is operating when we speak of the past. To know one's past is to act with respect to substitute stimulation having its sources in the unfathomably enormous number of things and events with which one has interacted over one's lifetime, including one's current behavior and bodily conditions. Generally speaking, the more elaborate the action stimulated by current stimuli and those historically associated with them, the greater the number of "previous presents" may be assumed to have

accumulated in that evolution. From this perspective, memories are not best described as "old" or "new", or of a long or short duration. Rather, they are more aptly described as thick or thin. Thick memories are relatively elaborate responses with respect to current stimulation, suggesting an evolution of many "previous presents". In other words, when an extensive relational history is involved with a particular stimulus, our response with respect to it might be considered "thick". Alternatively, thin memories are relatively simple responses stimulated by those same conditions, suggesting evolutions of fewer "previous presents". For analytical purposes, we might say that speaking of the past is "reactive" in that it occurs on the basis of existing functions of stimuli, most of which are substitutive in character. We know about our own past to the extent that we engage in implicit responding with respect to substitute stimulation. Thus, it isn't surprising that part of "getting to know oneself" often involves discussing past events, reviewing pictures, journaling, and more. These strategies, generally characterized as reminiscing by interbehaviorists, might further strengthen substitute stimulus functions such that they are made more present in the current event field (also see Fryling and Hayes, 2010; Kantor and Smith, 1975).

What about the future? Presumably, to know oneself also implies knowing something about what one is going to do or is likely to do. Skinner's analysis of this circumstance is more helpful (1974, pp. 27-28). In his words:

> *Another difficult question is "What are you going to do?" The answer is, of course, not a description of future behavior itself. It may be a report of strong covert behavior likely to be emitted publically when the occasion arises. … It may be a prediction of behavior based on current conditions with which the behavior is often associated . … It may be a report of a strong probability of behaving in a given way.*

Indeed, in as much as the future has yet to unfold, our talk about the future can have the character only of the present circumstance. In other words, talk of the future is a description of what is already ongoing. Unlike talk of the past, however, talk of the future is "constructive" as well as "reactive". By this we mean to suggest that, in addition to its occurrence on the basis of the existing and primarily substitutive functions of stimuli, talk of the future appears also to be a process by which additional functions are established. As we have mentioned, futures are entirely constructed, and are therefore verbal in nature. Related to this, there is an important distinction to make between the past and the future. The past, while no longer in existence, *did* exist at one time. That past is now present, operating through substitute stimulation. On the contrary, there *never* was a future, and it is therefore *only* available as a verbal construction, an idea. This is why animals respond to the present/past, as when a dog becomes excited when it's owner picks up a toy or speaks in a certain tone of voice, but do not respond or in any way think about the future. For example, animals are unlikely to worry about the future, again, because of this concept being entirely verbal in nature. Despite this analytical distinction, in the final analysis talk of the future is not about the future, much like talk about the past isn't actually talk about the past. The only thing we are doing when we speak of the future is making more and more elaborate descriptions of the present circumstance. Hence we never actually "predict" event configurations but rather describe the event configuration that is already present. The probabilities we assign to future events, therefore, are not properties of those events but rather of our ongoing beliefs (verbal behavior) about those events. Likewise, the goals we set for ourselves are descriptions of "goals" we are already accomplishing, goals we are completing verbally. Thus, the extent to which we know what we will do in the future involves elaborate responses to the current event field. We can only respond to the present psychological event, the only psychological event, and when we respond to the "future-present", we are responding to an especially verbal psychological event.

In summary, when considering the problem of "self-knowledge" it is best not to focus too much on the "self" part of the problem. There is nothing particularly interesting or unusual about the self as a stimulus object. One knows oneself as one knows anything. The problem is what knowing amounts to, what it consists of. We have suggested that knowing constitutes the establishment of a relationship between the behaving individual and features of the environment, distinguished by its involvement of verbal behavior. To know is to respond verbally, and the stimulation with respect to which such responding is occurring is largely substitutive. It is always substitutive when what one knows about a thing are its past or future conditions. Finally, the process by which substitutional functions of stimuli arise is continuously ongoing, and the greater the number of such functions inhering in a given stimulus object, the more one knows about it.

In conclusion, we have aimed to describe an interbehavioral alternative to the topic of knowledge and self-knowledge in behavior analysis. The interbehavioral position is unique in that it removes all forms of dualism and reductionism, and therefore provides an entirely naturalistic, psychological analysis. This coherence is facilitated by the system building approach described by interbehaviorists, where validity, significance, and comprehensiveness are the basis by which all work is evaluated. Behavior scientists interested in a wholly naturalistic, and comprehensive approach to the science of behavior might find the interbehavioral position to be an attractive alternative.

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