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THEORETICAL ARTICLE

Similarities and Differences Among Alternatives to Skinner's Analysis of Private Events

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Abstract While the consideration of private events is central to Skinner's Radical Behaviorism, Skinner's perspective on the topic of private events is not universally accepted within the behavioral community. At least 3 alternatives to Skinner's position have been purported, among them Baum's molar perspective, Rachlin's teleological perspective, and Hayes and Fryling's interbehavioral position. This paper considers the similarities and differences among these alternatives to Skinner's analysis of private events from the perspective of interbehaviorism and interbehavioral psychology. The implications of this analysis for philosophical and conceptual progress in behavior analysis are considered.

Keywords Interbehaviorism · Molar behaviorism · Private events · Radical behaviorism · Teleological behaviorism

Radical behaviorism distinguished itself from methodological behaviorism, at least in part, by the inclusion of private events in the analysis of behavior (e.g., Skinner 1945, 1974). For example, in addressing this topic, Skinner asserted that part of the universe is "enclosed within the organism's own skin" (Skinner 1953, p. 257), and that, accordingly, "With respect to each individual, in other words, a small part of the universe is private" (Skinner 1953, p. 257). This was considered to be an important departure from methodological behaviorism, which considered only overt behavior to be relevant to analyses of behavior. To Skinner, overlooking events of the private sort, such as covert verbal behavior, left many gaps in the analysis of behavior (Skinner 1957, p. 434). Generally, the radical behaviorist position on private events, as described by Skinner, can be summarized in the following ways: (a) there are events that are within the skin that can only be experienced by the individual that are important to consider; (b) those events are not like mental events, they are just like every other behavioral event; (c) other sciences, such as anatomy and physiology, will eventually teach us about these private events; and (d) in the meantime, interpreting these private events with laws of behavior is better than not.

Indeed, Skinner's treatment of private events has been repeated and elaborated upon by many notable behavior analysts, both historically (e.g., Zuriff 1979) and more recently (e.g., Marr 2011a, b; Moore 2009; Palmer 2009, 2011). For example, Moore (2009) elaborated on Skinner's position and emphasized that talk about private events is indeed talk about private *behavioral* events, and not mental events. Moreover, in pursuing an analysis of talk about private events, Moore considered (a) private behavioral events, (b) physiological events, (c) probabilities of engaging in behavior, and (d) explanatory fictions (p. 25). Similarly, Palmer (2009) endorsed Skinner's position when he stated that some behavior seems to "emerge from within the individual" (p. 4). Palmer also described the role of interpretation in science, and suggested that interpretations involving private behavioral events are distinct from interpretations involving cognitive events because they utilize behavioral principles (Palmer 2009, 2011). Moreover, consistent with Skinner's suggestion that other sciences will eventually tell us about private events (Skinner 1974, pp. 236–237), Palmer (2009, p. 12) suggested that the boundary between public and private is constantly shifting as we learn more about neural and other events within the organism. The majority of work on the Radical Behavioral position on

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private events emphasizes that Skinner's position is needed to avoid mentalism. As Palmer (2011, p. 201) stated, "If we do not engage in such interpretive exercises we have no explanation at all for much human behavior and we leave a vacuum to be filled with folk psychology and its derivatives." Still others seem to appreciate Skinner's analysis on more practical grounds (Dougher 2013).

Nevertheless, behavior analysts struggle to articulate what a private event *actually is*, and this difficulty is involved with several important issues (see Burgos 2009; Hayes 2013). Specifically, it remains unclear exactly what constitutes a private event, in what location such events are occurring (thereby questioning the very nature of their being *private*), how they differ from public events in general, and their role in a natural science of behavior. Some authors answer these questions by asserting that private events are in fact physiological events, events that will eventually be discovered and therefore be made public by physiologists or other scientists working outside of the field of behavior analysis (e.g., Marr 2011b; Skinner 1974, pp. 236–237). This conclusion seems to be consistent with Skinner's suggestion that private events are occurring *within the skin*. Along these lines, Skinner stated (Skinner 1974, p. 24), "There is no reason why it should have any special physical status because it lies within this boundary, and eventually we should have a complete account of it from anatomy and physiology." Still, others have argued that if behavior science is to offer a unique contribution to the domain of the sciences (Hayes and Fryling 2009a, b), it seems inadequate to assume that private behavioral events actually *are* physiological events.[1] Moreover, should they be considered physiological events, such events are certainly not private, at least in principle, and furthermore, a *behavior analysis* of such events would no longer be necessary. Indeed, the topic of private events raises important questions about the subject matter of behavior analysis (Hayes 2013; Marr 2013).

While the radical behavioral position disseminated by B. F. Skinner and others is surely the dominant behavioral approach to issues raised by so-called private events, alternatives to Skinner's analysis of private events are not entirely uncommon. However, as the alternatives to Skinner's analysis of private events are less conventional, an understanding of the similarities and differences among them might foster integration and collaboration, as well as clarify and highlight important conceptual issues. Therefore, our aim in this paper is to highlight the similarities and differences among the alternatives to Skinner's analysis of private events (Baum 2011a, 2013; Hayes 1994; Hayes and Fryling 2009a; Parrott 1983b, 1986; Rachlin 1988, 1992, 1995, 2003). Importantly, while it is not our aim to further criticize Skinner's analysis specifically, a reiteration of some of the fundamental concerns with Skinner's analysis may be apparent in the process of highlighting the similarities and differences among the alternatives. Before we consider any similarities and differences, we will first outline specific aspects of our interbehavioral foundation that are pertinent to the topic of private events. It is also the foundation from which the perspectives of Baum and Rachlin will be considered.[2]

Interbehavioral Foundations

The premises of interbehaviorism (Kantor 1953) and the scientific system of interbehavioral psychology (Kantor 1958) are fundamental to our analysis of so-called private events, and an interbehavioral alternative to the concept of private events has been articulated and refined over the years (e.g., Hayes 1994; Hayes and Fryling 2009a; Parrott 1983b, 1986). While there may be similarities between Skinner's Radical Behaviorism and Kantor's Interbehaviorism (e.g., Morris 1984; Parrott 1983a), there are specific differences between these two perspectives that are especially relevant to the analysis of private events (e.g., Parrott 1983b, 1986).

From the perspective of interbehaviorists, sciences identify subject matters that, though related, are conceptually distinct (e.g., Kantor 1958, p. 66). Generally, while the matrix of natural happenings may be considered one whole, no one science can study this matrix in its entirety. For this reason individual sciences identify a *unique* subject matter, so as to add something specific to the greater body of scientific knowledge. This subject matter is to have boundary conditions between its neighboring subject matters, and, although these boundary conditions are arbitrarily drawn for analytical purposes, they are not to be overstepped. Overstepping boundary conditions results in disciplinary redundancy and compromises the value of the participating disciplinary sciences (see Hayes and Fryling 2009b, for a more elaborate discussion of these issues and also the distinction between disciplinary and interdisciplinary sciences). Moreover, as the boundary conditions among the various sciences are arbitrarily drawn, it is also assumed that each of the disciplinary sciences is of equal value (Kantor 1958). Given this, interbehaviorists see the reduction of behavioral events to physiological events as problematic (Observer 1968, 1969). Thus, a *behavior* analysis of private events may not be reduced to or replaced by a *physiological* analysis, and vice versa. No science can be replaced by any

[1] Interestingly, early on Skinner also advocated for a distinct behavioral analysis but failed to remain consistent on this issue throughout his career (Skinner 1938, p. 5).

[2] We acknowledge this not to insist that the interbehavioral foundation is superior. It is included to be clear as to our own assumptions and the perspective from which the work of others is considered. We acknowledge that the reverse could also be done (for example, see Hayes 1993).

other science; all sciences are equal, as all are derived from the same matrix of natural happenings.

Interbehaviorists are also explicit about the distinction between constructs and events and are careful to derive constructs from events, rather than the more common practice of *imposing* constructs *on* events (Fryling and Hayes 2009; Kantor 1957; Smith 2007). As such, our descriptions of the world are derived from circumstances that have been contacted. Therefore, the notion that some events have a special, private status is called into question much as the employment of other hypothetical constructs is called into question (e.g., as mentalistic constructs of all varieties are criticized by behavior analysts). Indeed, the problem with mentalistic constructs is that they are not derived from contacts with events but rather, from cultural folklore (see Kantor 1953, pp. 26–27). As private events are *private* by definition, they too must not be derived from contacts with events. As stated by Observer (1981, p. 103), "Psychological privacy is not derived from observations of the behavior of persons." Given this, it isn't surprising that behavior analysis continues to struggle with the topic. Conceptually, this is not unlike philosophers and psychologists debating the nature of the mind and various other hypothetical constructs; the logical problem is the same (see Observer 1981).

The Psychological Event

Finally, the alleged need for private events in the analysis of behavior may be derived from more general confusion regarding the nature of the subject matter of behavior science (Parrott 1983a, b, 1986). To an interbehavioral psychologist, the subject matter of psychology is composed of functions among stimulation and responding (sf←→rf). Moreover, these functions participate in integrated event fields involving other factors. Kantor (1958, p. 14) defines the psychological event by the following equation: PE = C(k, sf, rf, st, hi, md); where *PE* stands for the psychological event, *C* the fact that the event is one integrated happening, *k* that each psychological event is a unique event, *sf* stimulus function, *rf* response function, *st* setting factors, *hi* interbehavioral history, and *md* medium of contact. As all of these factors are participants in a single integrated psychological event, none are considered to be more or less causal or influential than any of the others (Fryling and Hayes 2011; Hayes et al. 1997; Parrott 1983a).

Central to our consideration of private events is that fact that each psychological event is a *unique* event, and each interaction therefore has an element of specificity. From the perspective of interbehaviorism, every response is indeed a unique response to the extent that it is always an individual organism responding with respect to stimulation. Thus, all of one's behavior is unique. Indeed, the movie that one watches is not the same movie as another watches, even at the same time, sitting next to each other in the same theater. Therefore, conceptualizing some events as being uniquely experienced by the individual, and therefore private, fails to appreciate the fact that *all* behavior occurs in unique event fields. The implication of this is that there are no uniquely private events that require special "private" status as all psychological events are unique (Observer 1981). In other words, when we acknowledge that *all* behavior is unique, there is no need to distinguish "private" behavior from public behavior or to refer to some psychological events as "private" on the basis of their alleged uniqueness in the first place.

Also pertinent to the analysis of private events is the explicit interbehavioral distinction between stimulus objects and stimulus functions (Kantor 1924, pp. 50–51, 53). Interbehaviorists distinguish between the source of stimulation and the psychological function of stimulation. This distinction is especially important in the analysis of complex behavior, as it removes the need to refer to unobservables and unknowns. Specifically, when an organism responds with respect to spatio-temporal relationships among various factors, those factors may, at a later time, substitute for physically absent factors because of their having developed substitute stimulus functions. Thus, when talking about Venice, one might actually see Venice, despite the fact that they are not actually in Venice. In this case, the word *Venice* has developed substitute stimulus functions for Venice itself, such that one might actually see Venice in the absence of the thing seen (or similarly hear, feel, and otherwise interact with Venice in the absence of the thing seen, heard, and felt).[3] Of course, stimulation cannot occur without responding, and the responses involved with substitute stimulation are also of interest. When one engages in seeing, hearing, or other interactions with "Venice", in the absence of Venice itself, it is clear that the responses have nothing to do with the object properties of the stimulus "Venice". Kantor refers to this sort of responding as implicit responding (Kantor 1926), generally defined as responding with respect to substitute stimulation. Implicit responding is a distinct sort of responding as the form of the response has nothing to do with the physical properties of the stimulus. For example, you can think about anything, anywhere, and this is contrasted with behaviors that are restricted by object properties of stimuli, such as when one opens a newspaper (i.e., there are only so many ways a newspaper can be opened, and these responses depend on the object properties of the newspaper). Importantly, implicit responding, like all behavior, occurs in the public domain (the only domain). The interbehavioral concepts of stimulus substitution and implicit responding are central to a range of

[3] Word stimuli are especially likely to develop substitute stimulus functions because they can occur with respect to any physical object; that is, they can occur anywhere, anytime (see Parrott 1984).

complex behavioral events, including memory (Blewitt 1983; Fryling and Hayes 2010; Hayes 1998; Kantor and Smith 1975), perspective taking (DeBernardis et al. 2014), dreaming (Dixon and Hayes 1999), and more.

It is clear that the concepts of stimulus substitution and implicit responding apply to a wide range of complex behavioral events. It is important to emphasize that it is never anything private that is participating in these events. Moreover, the uniqueness of these psychological events can be overcome as one develops a more thorough relational history with respect to another person. That is, substitute stimuli and implicit responses can be observed and contacted by others just as any other stimulus and response can. As such, observational difficulties have nothing to do with stimuli or responses being private, and certainly not uniquely experienced within the skin, but with an insufficient observational history (e.g., DeBernardis et al. 2014; Hayes 1994; Hayes and Fryling 2009a). The difference between public and the allegedly "private" events amounts to the involvement of substitute stimuli and implicit responding, both of which become increasingly apparent given appropriate observational histories with respect to others.

In the following section we provide a brief overview of the molar positions of Baum and Rachlin. Importantly, it is not our aim to provide a comprehensive overview of these positions, but rather, to orient the reader to them so that a consideration of similarities and differences among the alternatives is permitted.[4]

Molar Alternatives

Baum

Baum subscribes to a molar perspective, which has lead to a reconsideration of Skinner's analysis of private events. To start, Baum does not necessarily believe that private events do not exist. Rather, it is Baum's position that private events are not needed in behavioral analyses, and moreover, that they may even be distracting (Baum 2011a, p. 197). To Baum, behaviorists use of the term *private events* may be the only way to talk about something "else," while still subscribing to the dualistic conventionalities of the English language (p. 187). Baum described two uses of the word private; one, which implies a special world only to be known by the person experiencing the world (as in covert thoughts), and another, which is merely a practical issue; that is, a situation in which a behavior is occurring but not currently being observed (e.g., working alone in your office with the door shut). To Baum, the first use of the term invites the dualism that behavior analysts claim to avoid, and the other refers not to private events, but to public events which are not currently being observed. In other words, their alleged "privacy" is simply a practical problem.

As may be predicted by his molar perspective, Baum suggests that behavioral explanations must be historical in nature, rather than immediate as found in traditional, mentalistic psychologies. In considering the historical context, or behavior as extended in time, explanations are always found in the public environment, without pleading to private events. As Baum states, "The temptation to posit private events arises when an activity is viewed on too small a time scale" (Baum 2011a, p. 194). Using this perspective, Baum suggests that seeing, hearing, beliefs, pain, and other behaviors typically assumed to be private in nature, can be observed by looking at the larger context of the behavior extended in time. For example, we know that someone has heard something because of how their behavior changes at a later time, and likewise, we know that someone is in pain based on observable events at a later time. There is nothing private between the stimulus and the response, and, to Baum, the need to posit something like a private event is derived from dualism and a short sighted analysis of behavior. Furthermore, nothing is to be gained from such a consideration. That is, to Baum, there is no practical value to notions of private events.

Rachlin

Rachlin also embraces a molar position, though he prefers to use the phrase *teleological behaviorism* to emphasize final causes (Rachlin 1992). Consistent with the molar position, Rachlin prefers to conceptualize behavior over extended periods of time. Related to this, Rachlin notes that Skinner made a contribution to psychology when he stated that not all behavior has an immediate stimulus, but that he failed to take this step with respect to reinforcement; to Rachlin, neither stimuli or reinforcers need to be immediate (Rachlin 2003, pp. 191–192). To Rachlin, mental terms such as *desire* and *pain* are descriptions of patterns of behavior. Thus, when one desires something, they behave in certain ways *over time*, and likewise, when one is passionate about something, they again behave in certain ways *over time*. In comparing his analysis to that of Skinner, Rachlin noted that while Skinner had a problem with mental terms, but not inner happenings, the exact opposite is the case for teleological behaviorism. Rachlin does not have a problem with mental terms, and views mental life as extended patterns of overt behavior (the only sort of behavior). To Rachlin, there is no inner psychological life (Rachlin 1995).

Like Baum, Rachlin's perspective on private events rests upon an important distinction, between what Rachlin calls Privacy A and Privacy B (e.g., Rachlin 2003, p. 187). Privacy A refers to public events which are not currently being observed, such as when someone brushes their teeth privately

[4] The perspectives of Baum and Rachlin are reviewed in alphabetical order.

in their bathroom. As noted by Rachlin, Privacy A is typically what people are referring to when they refer to their "right to privacy." Privacy B refers to behaviors which could not possibly be observed, such as what radical behaviorists refer to as covert thinking. Rachlin does acknowledge that there are all sorts of events going on within an individual. In talking about his own behavior, Rachlin states, "Of course, there are all sorts of events going on within my head, neural events, hormonal events, physiological events." (Rachlin 2003, p. 187). Rachlin's concerns are not with those events, but with those events being considered the subject matter of a science of psychology.

Importantly, to Rachlin, these issues are not trivial. If we were to speculate about internal events we would be sent looking for the internal correlates of behavior, as when we look for the physiological correlates of fear (Rachlin 2003, p. 191). As stated by Rachlin, "behaviorists are not qualified to pursue this search (and even those who are qualified have not succeeded)." (p. 191). To Rachlin, "if a single response is not apparently reinforced, the behaviorist should be looking for the reinforcer not *deeply* inside the organism but *widely* into the organisms' temporally extended environment" (p. 191). These statements make the importance of these conceptual issues to investigation clear.

To reiterate, it is not our goal to provide a comprehensive overview of the perspectives of Baum and Rachlin, but to provide a brief overview of their positions more generally. Moreover, the implications and details of various aspects of their positions will be considered in more detail in the next section of the paper where we highlight some similarities and differences among the various alternatives to Skinner's analysis of private events. Of course, many of these issues are closely related, and we acknowledge that our categorization of the similarities and differences is done for purely analytical purposes.

Similarities

Skinner's Analysis Is Not Absolute

Though it is perhaps obvious, one feature that all of the alternatives to Skinner's analysis share is an assumption that Skinner's analysis is not *the* analysis of this issue. In Kantor's terms, science is not about absolutes or universals (Kantor 1953, p. 3), and this seems to be an assumption shared by both Baum and Rachlin, at least concerning Skinner's position on private events. Ways of thinking about a topic need to be carefully evaluated – and, if their premises are faulty, they warrant reevaluation and alternative formulations.[5] This is essential for the continued health of scientific disciplines. The proponents of alternatives to Skinner's analysis of private events share an appreciation of the need for reevaluation.

[5] See Kantor's writings on system building (Clayton et al. 2005; Kantor 1958).

Dualism

Each of the alternatives takes issue with the dualistic underpinnings of Skinner's analysis of private events, though to greater or lesser degrees and in more or less explicit fashion (see "differences" below). For interbehaviorists, all dualisms must be eliminated. Again, as all constructs are derived from events, there are no constructs in the interbehavioral system that are derived from anything other than events in the natural world (the only world; again, see Observer 1981). Along similar lines, Baum (2011b) emphasized that interpretation is different from literature; it is not simply "made up." Baum stated that "dualism must be excluded from any science, because the existence of two kinds of stuff creates the intractable problem that the influence of one kind of stuff on the other remains forever mysterious" (p. 241). Baum continues, "Environmental events are, by definition, observable; the phrase *private environmental event* is an oxymoron" (Baum 2011b, p. 240). Rachlin also has trouble with the dualism involved in the analysis of private events. Again, Rachlin's concerns are not with mental *terms*, but with notions of privacy specifically. Along these lines, Rachlin stated (Rachlin 1995, p. 179), "Overt behavior does not just *reveal* the mind, it *is* the mind." Rachlin further suggests (p. 180) that while Skinnerians object to things that are mental, but not things that are private, the exact opposite could be said for teleological behaviorism. As mentioned earlier, Rachlin's concern is not with mental *terms*, but with internal mediators. Rachlin argues that seemingly private events, such as those involved in interpretation, all consist of what people say, write, and do – not what goes on inside the interpreter (Rachlin 1995, p. 182). In describing this approach, Rachlin stated (Rachlin 1995, p. 181), "The teleological approach to the thought of a writer, for example, would look for a writer's thought in the writer's writing, revising, and speaking (at the boundary between the whole organism and its environment) rather than inside the writer's head." The alternatives all share a concern with the dualism in Skinner's analysis of private events.

What *Is* Within the Skin?

Each of the alternatives also questions exactly what is held to be happening within the skin. From the perspective of interbehaviorism, events within the skin pertain to biology, physiology, and other related sciences. To be sure, the events studied by these sciences *are* important events; they participate in everything an organism does. Still, psychological events cannot be *reduced* to or confused with those events. Baum's thoughts on the question "what actually is within the

skin?" are made clear by the following statement: "To be sure, some events within the skin are like Neptune: neural events, glandular secretion, and muscular contractions. These are measurable and thus potentially public. Thoughts, feelings, and sensations, however, unlike these events, are not located within the skin and cannot finally be made public." (Baum 2011b, p. 239). Rachlin's (2003, p. 187) distinction between Privacy A and Privacy B is also relevant. Privacy B, in referring to events that no one could ever see, even in principle, is problematic. Events like "covert thinking" (Skinner 1957) fall into this category. Again, to Rachlin, there are obviously things occurring within the skin (Rachlin 2003, p. 187), but those things are not the proper subject matter of psychology. Thus, each of the alternatives to Skinner's analysis have concerns with speculations about psychologically relevant events that cannot be confronted by virtue of the location in which they are held to be occurring. Events within the skin are (a) potentially public and (b) biological.

Reconsideration of the Subject Matter

Though differing in some relatively minor ways (see below), both Baum and Rachlin embrace a molar perspective. In doing so, behavior is considered more extended in time, and therefore not viewed as a discrete, *molecular* happening (see Baum 2013; Rachlin 2013, pp. 212–213). Rachlin made his concerns with the molecular analysis clear when he acknowledged that while Skinner did indeed abandon a search for immediate stimuli preceding behavior, he continued to search for immediate reinforcers. The outcome of this is the internalization of reinforcers. Again, in Rachlin's view, Skinner failed to take the next step, to abandon both the search for immediate stimuli *and* immediate reinforcers, and begin to examine the broader, temporally extended context in which behavior occurs (Rachlin 2003, pp. 191–192).

In embracing the molar perspective, Baum and Rachlin do not find the need to infer private events. In other words, when considering molar response patterns, including the larger context in which behavior is situated, inferences about something private become unnecessary; public events are sufficient to explain all behavior. The interbehavioral alternative also reconceptualizes the subject matter, as an integrated field event (Kantor 1958; Parrott 1983a). As discussed above, the interbehavioral perspective, in embracing the importance of interbehavioral history, emphasizes both stimulus substitution and implicit responding. Therefore, current behavior is more readily understood as being intimately involved with its history; it *is* its history (Hayes 1992).

Parrott (1983a, 1983b, 1986) has pointed to issues with the terms stimulus and response specifically, advocating that that the distinctions between stimuli and stimulus functions and responses and response functions be more adequately systematized in behavior analysis. Rachlin has also pointed to problems with the use of the terms stimulus and response in behavior analysis. For example, Rachlin stated (Rachlin 1995, p. 181), "The concepts *stimulus* and *response*, as Skinner had pointed out in his thesis (Skinner, 1931) and reiterated in *The Behavior of Organisms* (1938), are classifications (categories) of correlated environmental and behavioral events, defined in relation to a whole organism – an intact organism. They have no meaning inside the organism." Moreover, Rachlin stated, "Faced with complexity in behavior, teleological behaviorism continues to reject the internalization of behavioral concepts. To account for complexity, teleological behaviorism instead broadens those concepts. It defines mental terms, not as what a person says at the moment but as what a person says and does over an extended period of time" (Rachlin 1995, p. 181).

Interestingly, Rachlin believes that the molar perspective would remove much of the historical and current objection to behaviorism by philosophers: "The objections raised against behaviorism by philosophers—that it is limited to brief discrete responses such as a pigeon's pecks or a rat's lever presses—are not valid when behavior is viewed in molar terms over periods of time" (Rachlin 1995, p. 181). All of the alternatives reconceptualize the subject matter in some way, and all place emphasis on behavioral history and the larger context in which behavior participates. In doing so, all behavior can be explained without referring to private events.

While we acknowledge that there may be other similarities or that the above-mentioned similarities are obviously related and may also be articulated in other ways, we hope we have identified some of the ways in which the various alternatives to Skinner's analysis are related. While a number of interrelated similarities exist, the alternatives to Skinner's position are not identical. In what follows we comment on the differences between the alternatives to Skinner's analysis of private events.

Differences

Molar Perspective

As mentioned above, both Baum and Rachlin embrace a molar perspective. While the interbehavioral alternative is sensitive to this perspective, it is not characterized as either molar or molecular. Rather, an integrated field approach seems to be somewhat molar *and* molecular—specifically, it is the larger pattern of behavior which is involved in *current* behavior, it *is* current behavior (see Hayes 1992). When the subject matter of behavior science is conceptualized as a psychological event, historical patterns of behavior are entailed in current psychological happenings. In other words, what is happening now is a point in the evolution of all that has happened. Thus, it is molecular to the extent that the current event is the only event, and an understanding of this event requires a detailed analysis

of present factors; and is also molar to the extent that the current event is conceptualized as historical in nature. Present happenings cannot be thoroughly appreciated in the absence of an understanding of their history.

Baum and Rachlin's molar positions are different, although perhaps only slightly. To Baum (2011b, p. 243), the phrase *teleological* may carry with it more harm than good, as "teleological" implies final causes. Still, Baum recognizes that his objection to the "teleological" in Rachlin's teleological behaviorism is practical. In his words, "I do not think Rachlin is wrong, because I agree that in naming patterns of behavior we include what would traditionally be called goals of the activities" (p. 243). The interbehavioral position also avoids the teleological language of Rachlin's perspective, as, to an interbehaviorist, each and every event is conceptualized as a present happening. In other words, to an interbehaviorist, there is no future or goal of an event that exists beyond the present circumstance; both the past and future may be conceptualized as present happenings (Hayes 1992). In addition to this, there is perhaps one other slight difference between Baum and Rachlin, pertaining to how the different perspectives use traditionally mentalistic terms. As Baum points out, to Rachlin, one's "belief" (or other mentalistic terms) actually *are* their extended patterns of behavior. For example, an individual's belief in improving the world through academic work *is* all of the behavior they engage in such as teaching, reading, and writing. To Baum, though, these beliefs are not the extended action patterns, but rather the labels the culture gives to such action patterns. As with the first difference between these two perspectives, this one is not substantial (also see Rachlin 2011).

Substitution vs. "Extended in Time"

As we have described, the interbehavioral alternative embraces a psychological event perspective. Fully understanding how this is an alternative to private events, though, requires further elaboration as to the concept of stimulus substitution and implicit responding. To an interbehaviorist, psychological events are always integrated happenings that are occurring right now. There is no actual past and no actual future in which events may be occurring. Thus, the past is happening right now, and the future, as an entirely verbal construct, also only exists right now (Hayes 1992). Therefore, it is not enough to simply state that the present psychological event is historical in nature. The historical nature of the psychological event also involves the development of substitute stimulus functions, and likewise, corresponding implicit responding. As previously discussed, it is through substitution that our histories, including features of that history that are not physically present, are made psychologically present. Moreover, they are all present here in the natural world, the only world. The alternatives of Baum and Rachlin emphasize behavior as extended in time and do not address stimulus substitution.

Are There Actually Private Events?

Last, there may be some difference as to whether the alternatives posit the actual existence of private events; that is events that are private in principle. From the interbehavioral perspective there aren't any private events. Of course there are events occurring within one's body that are not currently being observed (e.g., biology, neurology, physiology), but these are not private in principle, they are simply not currently observed. In addition, there are behaviors that occur that are not being observed more generally (as when one is reading alone in their office), but these are not private events, they are simply public events not currently being observed. Rachlin's stance on the topic also seems to be clear; again, that there are no events which are private in principle, only biological and other public events occurring in the body. Baum's stance on this topic is the least clear, however. While it could certainly be said that Baum does not believe private events which are private in principle are necessary or helpful in the analysis of behavior, it is less clear whether or not Baum believes such private events actually exist. The following quotes, taken from his 2011a paper, highlight this uncertainty:

> Many different types of private events occur within the skin: neural events, events in the retina, events in the inner ear, subvocal speech (i.e., thinking), and so on. All of these are possibly measurable and, therefore, possibly public. I will argue that private events are not *useful* in a science of behavior, and, far from being a key defining aspect of radical behaviorism, private events constitute an unnecessary distraction. (p. 186)

The interesting aspect of this quote is the reference to covert speech, especially as referred to as "thinking." Baum further implies that covert speech might be occurring at a private level when, in describing an example of behavior extended over time, he stated:

> Whatever covert speech may have occurred hardly matters, because Tom is engaged during the period of observation in the activity of digging a ditch, laying a pipeline, or installing a waterfall. Seen on a larger time scale, the activity is continuous, and any private events that occur may be ignored. (p. 194)

Another quote from Baum, suggestive of his position, is as follows: "The real solution to the problem of privacy is to see that private events are unnecessary to understanding behavior. They might or might not exist; they are irrelevant." (p. 197). Baum, it appears, is not suggesting that private events,

including subvocal speech/thinking, do not exist, but rather that they are not necessary in the analysis of behavior. It also seems these contentions of Baum's reflect a significant difference between his alternative and the other two alternatives to Skinner's position. Both Rachlin and the interbehavioral position suggest that events which are private in principle are not only unnecessary, but further, that they do not exist.

Conclusion

Skinner's analysis of private events has long been considered a benchmark of radical behaviorism. Still, questions have remained regarding the value of Skinner's analysis, especially the extent to which private behavioral events can be considered a legitimate subject matter in the absence of their ever having being identified or confronted. Moreover, when such "private events" are studied, it is obviously not a private event that is studied. The only events that can be studied are public in nature, as public events are all that exist.

In this exercise we highlighted some similarities and differences among alternatives to Skinner's position on private events. In doing so we have identified similar philosophical assumptions, and commonalities among the alternatives more generally. Still, it is important to recognize that such assumptions are neither right or wrong (see Hayes 1993); they are assumptions. However, from our perspective assumptions are to be derived from contacts with events (Kantor 1957, 1969). Consequently, we find ourselves aligned with interbehavioral assumptions and many of the assumptions shared by the alternatives reviewed in this paper. Moreover, interbehaviorists adopt Kantor's (1958) system building procedure, whereby the validity (internal consistency), significance (external consistency), and comprehensiveness of scientific systems are considered. System building efforts are therefore aimed at promoting the development of comprehensive scientific systems, all while considering the internal and external consistency of concepts, assumptions, and practices.

Importantly, conceptual issues do not exist on their own; they are intimately related to other areas of behavior analysis as a scientific system. For example, Rachlin (2003) pointed out the implications of these issues on research when he described how research derived from Skinner's position on private events will likely end up looking more and more deeply *within the organism*, whereas research conducted from other perspectives might examine more and more broad, contextual factors in the environment. Similarly, applied work derived from the alternatives might consider more contextual factors and their relation to various patterns of behavior targeted for intervention. Finally, it has been suggested that interpretations based on Skinner's conceptualization of private events are needed to fill the void otherwise left for mentalistic approaches (e.g., Palmer 2011, p. 201). However, there are now alternative ways in which this void can be filled, ways that do not require private events. As behavior science continues to develop and progress it is important to consider similarities and differences among various perspectives such that assumptions may be clarified and strengthened, whereby more coordinative, integrative work be achieved.

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