Private Stimuli, Covert Responses, and Private Events: Conceptual Remarks

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In this article, I discuss the concepts of *private stimuli*, *covert responses*, and *private events*, emphasizing three aspects: the conditions under which private stimuli may acquire discriminative functions to verbal responses, the conditions of unobservability of covert responses, and the complexity of events or phenomena described as private. I argue that the role of private stimuli in the control of self-descriptive verbal responses is dependent on a relation (correlation or equivalence relation) with public stimuli, and that responses vary along a continuum of observability. These remarks on private stimuli and covert responses are introductory to an examination of the varying complexity of phenomena described as private. I argue that *private events* is a verbal response emitted under the control of phenomena of different degrees of complexity, and I interpret these phenomena, based on the principle of selection by consequences. I introduce the notion of *inclusiveness* to suggest that some phenomena related to privacy are less or more complex as they include relations of a phylogenetic, ontogenetic, and cultural origin.

Key words: private events, private stimuli, covert response, inside world, selection by consequences

Private events have been acknowledged as a main topic for behavior analysts dealing with complex human behavior, especially for those interested in clinical applications of behavior analysis (cf. Anderson, Hawkins, Freeman, & Scotti, 2000; Anderson, Hawkins, & Scotti, 1997; Dougher, 1993b; Dougher & Hackbert, 2000; Friman, Hayes, & Wilson, 1998; Moore, 2000; Wilson & Hayes, 2000). Conceptual work concerning private events, nevertheless, is still required to improve Skinner's original discussion (Skinner, 1945). As Moore has stated, "better services for clients and a better overall theoretical understanding of the human condi-

tion" (2000, p. 45) may be achieved once we come to a more complete understanding of the topic. This paper is intended to contribute to a conceptual discussion of private events. The goals of the paper are (a) to present an analysis of private stimuli and covert responses that works out some aspects of inaccessibility to public observation; and (b) to argue that many psychological phenomena treated as private events are complex phenomena, which may be approached with the causal mode of selection by consequences.

Following Moore's (1984) discussion and Banaco's (1999) argument, I will prefer to speak of covert "responses" rather than covert "behaviors," taking the latter to mean relations among responses and stimuli; therefore, they are not necessarily fully covert (e.g., verbal behavior may involve a covert response under the control of public stimuli; an instance of problem solving may involve both covert—precurrent—and overt responses). Both covert responses and private stimuli may be discussed from several standpoints.

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I will begin with Skinner's (1953/1965) view according to which "a private event may be distinguished by its limited accessibility but not, so far as we know, by any special structure or nature" (p. 257). In accordance with Skinner's reasoning, inaccessibility to public direct observation has turned out to be the distinguishing feature of private stimuli and covert responses in behavior-analytic literature. However, the basis for such inaccessibility is not clearly stated and demands further examination to achieve a more accurate view of privacy.

Stimuli and responses may be unobservable for different reasons. For example, in our culture, thinking or imagining, in contrast with voting, typing a password, taking a shower, or praying are responses that may be emitted privately, but their privacy comes from different sources. An event that has occurred in the past (e.g., a soccer game) may constitute an unobservable stimulus as well. What makes an event unobservable may be seen as a secondary issue to a behavioral science because *behavioral relations* are its subject matter. From a behavioral standpoint, what matters about the observability of events is whether or not they acquire stimulus functions in the behavior of observers.

This paper, however, emphasizes stimuli that are unobservable not because they lie in the past, but because they are generated by an individual's body, and observers cannot establish with them the same contact as the individual himself or herself does (i.e., that in principle, there is only one possible observer). Skinner (e.g., 1974/1993) refers to these stimuli as "the world within the skin" (p. 24). Donahoe and Palmer (1994), in their definition of private events, refer to "the inner world of the individual; i.e., the stimuli originating within the skin, to which each person has *unique* [italics added] access" (p. 361). This

paper also emphasizes responses (e.g., thinking, imagining) whose unobservability results not from physical barriers between the observed and the observers, but from features that include its emission with restricted participation of the motor apparatus. My objective with this focus is not to say that these stimuli and responses are events of a different quality or that they deserve a special treatment in a behavioral science. On the contrary, I intend to argue that what goes inside an organism cannot count as an independent cause of verbal behavior because its possible (private) stimulus function is dependent on a relation with public stimuli; and that responses are not simply public or private but may vary along a continuum of observability.

After examining the inaccessibility of private stimuli and covert responses, I will address the types of phenomena described as "private events." I will suggest that speaking or writing about private events is a verbal response under the control of diverse phenomena, which should be specified. When it is said that "hunger pangs" (e.g., Skinner, 1945), "emotions" (e.g., Anderson et al., 1997), or "anxiety" (Friman et al., 1998) are instances of private events, different types of phenomena, and phenomena that show different degrees of complexity are under consideration. As a verbal response, "private events" may be emitted under the control of any (more or less complex) behavioral relation in which private stimuli and covert responses take part. I hope to make this point clear as I suggest that the causal mode of selection by consequences helps us to understand the varying complexity of the phenomena we tend to treat under the concept of private events.

This paper is divided into three sections: (a) private stimuli, (b) covert responses, and (c) private events. The sections on private stimuli and covert responses are introductory to the

section on private events. They include a review of some behavior-analytic (especially Skinner's) interpretations, while also adding some conceptual remarks on the treatment of the concepts of private stimuli and covert responses. The section on private events develops an interpretation of phenomena related to privacy, based on its variety of complexity.

PRIVATE STIMULI

A person contacts the world with the mediation of his or her nervous system, which carries stimulation received through the sense organs (vision, hearing, touch, smell, and taste). Part of this world is one's own body, which can also affect the person as interoceptive or proprioceptive stimulation. The interoceptive and proprioceptive stimulations are those generated by the individual's own body: The interoceptive stimuli include "stimulation from organs like the bladder and alimentary tract, from glands and their ducts, and from blood vessels" (Skinner, 1974/1993, pp. 24–25); the proprioceptive stimuli are those generated by one's motor apparatus, "the muscles, joints, and tendons of the skeletal frame and ... other organs involved in the maintenance of posture and the execution of movement" (p. 25). Exteroceptive stimuli generated by an individual's body may be either public or private (e.g., the visual stimulation generated by one's dancing at a party [public] or in a rehearsal before a mirror in a closed room [private]). Interoceptive and proprioceptive stimuli are always private, in the sense that others cannot make contact with them as such. Whatever happens inside one's body may affect others as exteroceptive stimulation (sometimes with the help of instruments or physiological techniques), but will not affect them as proprioceptive or interoceptive stimulation. In Skinner's (1953/1965) example,

"the individual's response to an inflamed tooth ... is unlike the response which anyone else can make to that particular tooth, since no one else can establish the same kind of contact with it" (p. 257).

Private stimuli are often (though not always) located under the skin, and that has led Skinner to speak of "the world within the skin" (e.g., Skinner, 1974/1993, p. 24). But privacy is not a matter of localization, and the skin is not necessarily a boundary. There are circumstances in which an individual responds to some interoceptive stimulations that are not "under" or "inside" the skin. For instance, one may respond to a lesion in the skin itself, as interoceptive stimulation, as when not looking at it but still sensing its effects. On the other hand, one may respond to "inside" events (events under the skin) as exteroceptive stimulation (e.g., when one hears a stomach noise).

Private Stimuli and Stimulus Functions

Private stimuli may be physiological events that show stimulus functions, including eliciting, discriminative, and reinforcing functions. Each of these functions will be briefly mentioned below, but a more detailed treatment will be given to the circumstances in which private stimuli show a discriminative function to verbal responses. The emphasis on the role of private stimuli as discriminative stimuli to verbal responses is motivated by the fact that this is the circumstance in which privacy is linked to the issue of psychological concepts; it is also consistent with Skinner's (e.g., 1945, 1953/1965, 1974/1993) discussions of privacy. This emphasis also regards the great importance of the matter to clinical behavior analysis, in the context of which privacy has received a more systematic attention.

Private stimuli and unconditioned eliciting functions. Some private stim-

uli are unconditioned eliciting stimuli, as a result of the phylogenetic history of the species. For example, certain changes in the respiratory system may function as interoceptive stimuli that elicit sneezing responses. The individual will respond to those stimuli whether or not he or she has been exposed to specific ontogenetic contingencies. In that sense, some unconditioned eliciting stimuli constitute a part of the private universe that is a natural part of anyone's private environment. Note, however, that when the same event exerts a discriminative function to other responses—verbal responses, for instance—additional processes are involved that have to be explained.

Private stimuli and conditioned eliciting functions. A physiological event may also become a conditioned eliciting private stimulus. One occasion in which this may happen is when the individual is exposed to preaversive and aversive uncontrollable public stimuli, contingencies that produce what is called anxiety (cf. Skinner, 1974/1973, 1987/1989). Such contingencies may produce a decrease in the rate of responding, and the preaversive stimulus may acquire eliciting functions. A bodily condition that follows the exposure to the preaversive stimulus may itself acquire its eliciting functions: 'the condition felt as anxiety begins to act as a second conditioned aversive stimulus' (Skinner, 1987/1989, p. 7).

Private stimuli and reinforcing functions. A private stimulus may show a positive or negative reinforcing function. For example, the ingestion of a drug may be positively reinforced by the interoceptive stimulation it produces (as in the ingestion of alcohol) or negatively reinforced by the cessation of an interoceptive stimulation (as in the administration of a drug that ceases a pain).

Private stimuli and discriminative functions. A private stimulus may show a discriminative function for both verbal and nonverbal responses.

For example, an interoceptive stimulation generated by the respiratory system may function as a discriminative stimulus for one's nonverbal response when opening the window of the house or for the verbal response "I feel breathless."

Private Stimuli, Unobservability, and Bodily Conditions

When an interoceptive or proprioceptive private stimulus shows a discriminative function for a verbal response, the processes that work to turn parts of the private universe into an individual's private environment are those verbal processes described by Skinner (1945) and other verbal processes later investigated by behavior analysts (e.g., emergence of equivalence relations; see DeGrandpre, Bickel, & Higgins, 1992). Skinner has argued that from a psychological point of view, "the only problem which a science of behavior must solve in connection with subjectivism is in the verbal field. How can we account for the behavior of talking about mental events?" (1945, p. 294). Two aspects of Skinner's answer should be stressed here. The first is that verbal responses descriptive of private events are acquired under the control of a set of stimuli that include public stimuli (these make the reinforcing action of the verbal community possible). Second, the participation of the public event in the control of that response does not end with its acquisition. As Skinner asserts,

The individual acquires language from society, but the reinforcing action of the verbal community continues to play an important role in maintaining the specific relations between responses and stimuli which are essential to the proper functioning of verbal behavior. How language is acquired is, therefore, only part of a much broader problem. (p. 272)

Because the reinforcing action of the verbal community is based on public (exteroceptive) stimuli, the

private stimulus that comes to acquire discriminative control over a verbal response is an interoceptive or proprioceptive stimulation that is correlated with those public stimuli and that becomes relevant through additional verbal contingencies that promote self-observation. The important point here is that self-observation is not all; a private event is dependent on a correlation with a public event to acquire *and maintain* a stimulus function in the control of a verbal response. This is why a private event may not be taken as a cause of verbal behavior (beyond the problem of its inaccessibility to manipulation). Because its functionality is dependent on its correlation with public stimuli, the reference to the private event will not suffice as an explanation. One's verbal responses descriptive of the "inside world" will always be under the control of a set of public stimuli (the ones that ground the verbal community reinforcing action), though probably they are also under the control of a varying (inter- and intrasubject) interoceptive or proprioceptive stimulation.

Of course, when one has learned self-descriptive responses partially under the control of an interoceptive or proprioceptive stimulation, the response may be emitted in some occasions under the control of the private stimulus. As Skinner (1945) noted, however, social contingencies keep working after the acquisition of a verbal repertoire to maintain verbal responses under the control of proper stimuli. In the long run, the response's functionality will depend on its control by the public stimuli on which the verbal community bears its reinforcing action.

Behavior-analytic understanding of verbal behavior has advanced since Skinner's (1945) original discussion of the processes through which private stimuli may acquire discriminative functions for verbal responses. We now know, for example, that interoceptive stimuli may show

functions that result from their participation in equivalence classes of stimuli (see DeGrandpre et al., 1992). When this is the case, we should note that the members of the class (e.g., interoceptive and exteroceptive stimuli) are equivalent in the sense that they show emergent equivalence relations, but this does not mean that they are equally dependent on these relations to acquire stimulus function. An exteroceptive stimuli (e.g., a visual stimulus) is not dependent on being a member of a class of equivalent stimuli to control, for example, descriptive responses. The same may not be said of interoceptive and proprioceptive stimuli. An interoceptive or proprioceptive stimulus that is a member of an equivalence class depends on these equivalence relations (or on correlations with public stimuli, as seen above) to acquire the same functions. Again, reference to the interoceptive or proprioceptive stimulation will not suffice to explain the self-descriptive response.

Skinner (1974/1993) notes that the nervous system that makes it possible for someone to contact exteroceptive stimulation "also plays an important part in observing our own body" (p. 25), although this is not always acknowledged. When people describe themselves as excited, for instance, they are largely under the control of exteroceptive stimulation, either from their own bodies or from their relations with the outside world. However, in modern western cultures, social contingencies do not favor the discrimination of all sources of control of self-descriptive repertoires. They favor more frequently the discrimination of what goes on in the body than the discrimination of behavioral relations (e.g., those responsible for descriptions of excitement). It is the exposure to verbal contingencies that gives rise to the private environment about which we talk and that makes some physiological events acquire a partial discriminative control of verbal responses. In other words,

from the point of view offered here, a private stimulus will always be dependent on a relation (either a correlation or an equivalence relation) with public stimuli. Note, however, that a correlation is not a sufficient condition to turn a physiological event into a private stimulus. Verbal contingencies that promote self-observation are also required to build one's world of private stimuli.

The fact that the discriminative function of a private stimulus in the control of a verbal response is dependent on the relation of such an event with public stimuli is the reason why, from the point of view of all psychological concepts, what goes on inside the organism is not enough as an explanation. Consideration of the role of private stimuli in verbal responses regarding psychological concepts is what leads Skinner and other behavior analysts to say that private discriminative stimuli should not be taken as causes of behavior. They should not be considered causes not simply because they are unobservable or cannot be manipulated but because their functionality is dependent on that relation with public stimuli.

COVERT RESPONSES

Covert responses are inaccessible to public observation. They are responses of the organism as a whole emitted "on such a reduced scale that [they] cannot be observed by others—at least without instrumentation" (Skinner, 1953/1965, p. 263). One class of variables that control whether a response is emitted covertly or overtly includes the social contingencies of reinforcement to which one has been exposed (Skinner, 1968). According to Skinner (1968, 1974/1993), a response learned at the overt level "may ... recede to the covert level" (Skinner, 1945, p. 277) and "return to the overt level" (Skinner, 1974/1993, p. 31) as a function of social contingencies of reinforcement.

Examples of such contingencies are those involved in requests to "think silently" or "think out loud" (cf. Skinner, 1968, 1974/1993), as well as punishment contingent on overt responses. As responses of the organism as a whole, covert responses are considered to have physical dimensions. Following Skinner's conceptualizations, his references to a "reduced scale" of covert responses, and the possibility of making them "return" to the public level, this section will focus on responses that are unobservable not due to physical barriers between observers and observed but as a result of social contingencies that alter the form of its emission. As mentioned before, whether or not the use of the concept of covert responses should be restricted to such responses has not been clearly stated and will not be the subject of the present discussion.

In the light of Skinner's interpretation of covert responses, three questions may be addressed concerning the privacy of covert responses: (a) If a covert response is emitted in a "reduced scale," what does the scale measure? (b) What is the topography of a covert response? (c) What makes thinking different from the other unobservable responses (e.g., secret voting or typing a password) emitted in conditions under which they are inaccessible to public observation?

Before answering these questions, it should be noted that any covert response is only circumstantially covert, due to social contingencies of reinforcement. One cannot argue that a response like thinking is *naturally* inaccessible to public observation, whereas a response like voting is only *transitorily* inaccessible. They are both responses that may become public at any time, as long as the individual is exposed to proper contingencies of reinforcement.

It is also important to note that thinking is not the only type of covert response identified by Skinner. Ac-

cording to Skinner (1968), "the behavior most easily observed at the covert level is verbal ... but non-verbal behavior may be covert" (p. 124). Whether verbal or not, covert responses tend to have their topographies defined in negative terms. The reference made to the topography of thinking usually points to the fact that it is *not* vocal. Also, a definition of the topography of covert "driving" (not covertly seeing oneself driving), for example, would probably refer to a sort of nonmuscular driving.

There are probably several reasons why a response is emitted covertly, and it may be helpful to review some of them. Skinner (e.g., 1957/1992) mentions that covert responses may result from a sort of weak stimulus control. Looking at a very old picture, one may think "this seems to be Maria," but the person will more likely emit the response "Maria" overtly when really facing Maria. A response may also be emitted covertly because it is "simply the easiest or, for any reason, the likeliest at the moment" (Skinner, 1957/1992, p. 436). For example, it may be easier to covertly test a move in a chess game than to do so by moving the pieces on a chess board. In such circumstances, covert responding "has the advantage that we can act without committing ourselves; we can revoke the behavior and try again if private consequences are not reinforcing" (Skinner, 1974/1993, p. 114). When the covert response is simply the easiest one, what explains it is one's "convenience" (Skinner, 1957/1992).

There is a third reason why one responds covertly, which Skinner (1957/1992) assumes to be much more important than weak stimulus control or convenience. It is the fact that one is faced with social contingencies that involve punishment contingent on the overt form of the response. In a section on covert verbal behavior Skinner points out that

Covert speech is not ... wholly or perhaps even primarily a labor-saving practice. As we have seen, verbal behavior is frequently punished. Audible behavior in the child is reinforced and tolerated up to a point; then it becomes annoying, and the child is punished for speaking. Comparable aversive consequences continue into the adult years. ...

That avoidance of punishment is a more likely explanation than convenience is shown by the fact that covert behavior returns to the overt level when a punishing audience is no longer in control though convenience has not been altered. Many people who live alone gradually come to talk to themselves aloud. In the presence of other people the return to the overt level may take time, for the nonpunishing character of an audience cannot be established in a moment. (pp. 436-437)

Punishment contingent on overt responses, more than convenience or weak stimulus control, explains the emission of covert responses, for instance, those related to thinking. When a covert verbal response is emitted, it cannot be punished because it does not affect the potentially punishing social environment. It does not affect the social environment because one's vocal musculature is not activated as in the overt form. This fact led early behaviorists (e.g., Watson, 1920) to approach thinking as subvocal speech. But Watson (1930/1970) also argued that there are "stages" of activation of the muscular systems in thinking and established a relation between the higher stage of such activation and social constraints:

The child talks incessantly when alone. At three he even plans the day *aloud* ... Soon the society in the form of nurse and parents steps in. "Don't talk aloud—daddy and mother are always talking to themselves." Soon the overt speech dies down to whispered speech and a good lip reader can still read what the child thinks of the world and of himself. Some individuals never even make this concession to society. When alone, they talk aloud to themselves. A still larger number never go beyond even the whispering stage when alone. ... But the great majority of people pass on to the third stage under the influence of social pressure constantly exerted: "Quit whispering to yourself," and "Can't you even read without moving your lips?" and the like are constant mandates. Soon the process is forced to take place behind the lips. (pp. 240-241)

In Skinner's view of the matter, a verbal response may be emitted with different degrees of participation of the vocal musculature. A verbal response, in that sense, is not simply vocal or subvocal.

The range of verbal behavior is roughly suggested, in descending order of energy, by shouting, loud talking, quiet talking, whispering, muttering "under one's breath," sub-audible speech of unclear dimensions, and perhaps even the "unconscious thinking" sometimes inferred in instances of problem solving. So far as we know, the events at the covert end have no special properties, observe no special laws, and can be credited with no special achievements. (1957/1992, p. 438)

Skinner's reference to a "descending order of energy" of verbal responses seems to be an important cue to unfold the basis of inaccessibility of certain covert responses. It may be interpreted as a reference to varying degrees of observability of responses, according to the level of participation of one's motor apparatus (the vocal musculature, in the case of verbal responses; the muscular and skeletal systems in the case of driving, etc.). According to this view, some covert responses are responses emitted with lower degrees of participation of one's motor apparatus. Covert verbal responses therefore might be interpreted as verbal responses emitted with lower degrees of participation of one's vocal musculature.

However, as Skinner (1957/1992) suggests, perhaps we should not simply talk of a boundary that sets apart overt and covert responses. Responses vary along a continuum of observability, and the basis of such a continuum may be discussed. Skinner suggests a "descending order of energy" that has been interpreted here as a reference to the degree of participation of one's motor apparatus. Other sources of variability in the observability of responses may be suggested. One of them is the observation training of observers. Suppose two people are asked to register the behavior of a child in a classroom. If

one of them is a well-trained behavioral psychologist, he or she will probably be better at identifying certain responses than a person who has never been asked to observe and describe behavior or received any instructions concerning this task. At this point, the observability of the response would be a property of the relation between the observer and the observed.

The idea of a continuum of observability of responses is not original. Donahoe and Palmer (1994) have suggested it in the context of a reference to another source of variability of observability, the tools of the observer:

The observability of a response is not determined by its intensity or magnitude, but by the characteristics or tools of the observer. ... We must avoid the temptation to think of covert behavior as a kind of behavior, with properties essentially different from overt behavior. Rather, all behavior lies on a continuum of observability. (p. 275)

A fourth potential source of variability in the observability of responses has been suggested in the literature of interbehavioral psychology (cf. L. J. Hayes, 1994; Kantor & Smith, 1975; Observer, 1973, 1981): the familiarity or intimacy between observer and observed. It is not the goal of this paper to examine interbehaviorist principles, but simply to suggest that this reference to familiarity may be adopted in a behavior-analytic interpretation of covert responses. Going back to the example of a child's behavior in a classroom, certain responses will most probably be observed and registered by one who has a shared history with the child than by one who has just been introduced to him or her (assuming that both have the same observational skills, tools, etc.). The intimacy between observer and observed (beyond the degree of participation of the motor apparatus) partially explains why relatives, friends or partners sometimes know much more

about a person's behavior than others do. L. J. Hayes has noted that Kantor's reference to intimacy differs from Skinner's notion of unobservability of private events. According to Hayes,

What Skinner calls "private events" and deems unobservable by virtue of the internal location of their execution, Kantor calls "subtle events" held to be capable of observation. Observation in the latter case depends minimally on shared histories between observers and the observed as a matter of enculturation, and maximally on the intimacy of the observer and the observed as a matter of shared individual histories. Kantor's analysis suggests, in other words, that what appears to be unobservable is not so in principle, but is instead subtle; and subtlety is not a formal characteristic of the event in question. That is to say, subtlety is not something about a particular event apart from an observer's insufficient history with respect to it. The greater one's history of interaction with subtle events, the more obvious they therein become since, psychologically speaking, observed events are nothing other than loci of response functions for observers. (p. 160)

The two conceptualizations, nevertheless, may be viewed as complementary to each other. Skinner rejects a difference in nature between overt and covert responses and argues that both are the responses of the organism as a whole. He also proposes that the overt or covert character of a response is a function of social contingencies. Skinner's interpretation may be complemented with Kantor's view, which more clearly says that the basis for unobservability of certain responses is a low participation of the motor apparatus in their emission. This feature may be seen as a function of social contingencies (Skinner), but it will give rise to unobservability depending on a history of interaction between observer and observed (Kantor).

One may argue that when familiarity explains the degree to which a response is public, what is observed is not the covert response per se, but collateral public responses. In fact, this may be the case. But it may also

happen that the intimacy L. J. Hayes (1994) mentions when she explains Kantor's views is also one that makes one able to recognize the other's response, even when it is emitted with restricted participation of the motor apparatus. For example, in Skinner's discussion of the "descending order of energy of verbal behavior," he refers to a stage in which what we have is a "subaudible speech of unclear dimensions" (Skinner, 1957/1992, p. 438). That response may be a covert response if it is emitted before an unfamiliar audience or a public response if it is emitted before a very intimate partner. This is the reason why we should prefer to include the relation between the observer and the observed in our analysis of covert responses instead of working with the idea that the covert character of a response is simply a property of the response itself.

In light of these aspects, we may review the questions addressed in the beginning of this section and the possible answers:

1. If a covert response is emitted in a "reduced scale," what does the scale measure? The reduced scale of covert responses has to do with the low participation of the individual's motor apparatus in the emission of the response.

2. What is the topography of a covert response? "Topography" often is a specification of the motor components in the emission of a response; therefore, one can provide limited specification of the topography of a covert response, due to its distinctive feature (i.e., its privacy).

3. What makes thinking different from other responses emitted in conditions under which they are inaccessible to public observation (e.g., secret voting or typing a password)? Unobservability is a criterion to define privacy. However, it may result from different sources, like physical barriers between observer and observed (as in secret voting)

and unshared history, observational training, observational tools, and structural features (as in thinking). In any case, the idea of a continuum of observability of responses seems to be a more consistent one than the simple covert-overt distinction.

One might argue that there are covert responses with respect to which the reference to observational training and tools, familiarity, and participation of the motor apparatus is not so relevant. This seems to be the case when we speak of private seeing, because seeing is sometimes interpreted as a response that can only be emitted covertly. According to such a perspective, seeing is simply a sort of "making contact" with a visual stimulus. But seeing is equally emitted with a restricted participation of the motor apparatus, and we should ask only whether or not it *becomes* covert due to social contingencies. At least in most cases (when phylogenesis does not explain), seeing is a function of social contingencies. One may see many different things when walking into a library, for example, depending on a previous educational history. And as we learn to see certain things our seeing must show public dimensions in order to be shaped by social consequences. These public dimensions (or collateral responses) will not remain as the seeing becomes strictly private. It is clear that conditioned seeing, hearing, and other responses will demand additional conceptual treatment. As much as we considered here, however, they do not conflict with the present analysis.

Much the same might be said about covert responses (conditioned and unconditioned respondents), with respect to which one might say that they are not first emitted in the overt form and then recede to the covert level. Perhaps, in this case we should consider first what counts as a response of the organism as a whole and then decide whether or not a response is covert. However, con-

sidering the limits of the present paper, a thorough analysis of these problems remains only a suggestion.

PRIVATE EVENTS

Private events is a verbal response emitted by behavior analysts under the control of very different putative phenomena such as happiness, thinking, anxiety, imagination, pains, and so on. What is found in common to all those events or phenomena is the actual or possible participation of either a private stimulation or a covert response, as previously examined. Because very different phenomena fall into this definition, any assertion about private events in general may be challenged, unless it clearly specifies to what class of events it refers. Sometimes such specification is not enough because the class itself may include phenomena of varying degrees of complexity. Sadness, for example, is a broad concept or a verbal response emitted under the control of several nonidentical phenomena. To go beyond controversies concerning private events, some sort of further clarification of that diversity is still needed. In the next paragraphs, two directions for such clarification are suggested: first, a classification of events or phenomena under the control of which behavior analysts talk of private events; second, a model for analyzing the varying complexity of private events, based on Skinner's causal mode of selection by consequences.

A Preliminary Classification of Events or Phenomena Treated as Private

The use of the concept of private events in behavior-analytic literature shows that at least three classes of events are relevant: (a) physiological conditions, (b) stimuli and responses as components of behavioral relations, and (c) behavioral relations. According to which class is referred, certain statements about privacy may or may not be valid. Conceptual

difficulties or disagreements may arise from the fact that some assertions are made concerning privacy in general, although they apply to only one subset of the events mentioned. For example, private events may be described as collateral products of contingencies of reinforcement (e.g., Skinner, 1985) or possible controlling variables of public responses (e.g., Skinner, 1945). Both perspectives are compatible, because in each case "private events" refers to different events (physiological conditions in the first case; private stimuli in the second). Overskeid's (1994) discussion of private events and the circumstances in which covert responses may acquire stimulus functions ignores those possible distinctions (although he correctly identifies some inconsistencies in Skinner's writings). His conclusion that a private event "can be as good a cause as anything" (p. 39) is an example of the limited validity of assertions concerning private events in general.

Anatomo-physiological conditions and private events. Because one's body may acquire stimulus functions in the form of interoceptive or proprioceptive stimulation, some statements about privacy are made on the basis of organic occurrences, whether or not these occurrences have stimulus functions. In other words, sometimes one's assertions regarding private events are concerned with physiological conditions, and these physiological conditions are not necessarily endowed with stimulus functions. This is especially the case when it is said that what one feels is a "collateral product of the causes of behavior" (Skinner, 1985, p. 296). Physiological occurrences are collateral products of one's environmental history, as long as they acquire no stimulus function. They become "causes of behavior" from the moment they may be said to function as either private or public stimuli (i.e., from the moment they are "felt"). A biochemically modified stomach is

a collateral product of one's evolutionary and environmental history. But when an individual's description of a pain is partially under the control of the stimulation generated by his stomach, that bodily condition is not simply a collateral product of his or her environmental history. It is endowed with stimulus functions; thus it is, or has been, part of a contingency. On the other hand, physiological events that have no stimulus function should not count as private stimuli; they are simply part of the behaving organism.

Private stimuli, covert responses, and private events. A different use of the concept of private events is one that makes reference to private stimuli or covert responses that are components or terms of behavioral relations. These are events with respect to which unobservability is assumed to be a crucial feature, and the conditions for such unobservability are those described earlier in this paper. These are not collateral products of contingencies but are terms of contingency relations. These terms have been acknowledged as relevant in phenomena usually described as "mental," "cognitive," or "subjective"; their possible or actual participation in a behavioral relation defines privacy in behavior-analytic literature. As terms of a contingency, private stimuli and covert responses are *part* of behavioral phenomena; their relation to other stimuli or responses is required to achieve a description of behavior. As seen above, this may be crucial in the case of private stimuli that control self-descriptions, whose functions are dependent on their relation with other stimuli.

Behavioral relations and private events. When private stimuli or covert responses take part in behavioral relations, the relations themselves are complex phenomena that may be responded to as private events, even though they are not entirely unobservable nor are they collateral

products of contingencies. Problem solving, for example, is a behavioral relation itself, or more usually a set of behavioral relations, in which a pre-current response may be private, but the relation as a whole is not unobservable. Feeling sad, or happy, or scared may also be seen as including relations of this sort, the private stimulation being the unobservable component. In behavior-analytic publications (e.g. Anderson et al., 2000) one instance of this type of relation—private verbal stimuli functioning as rules—has been emphasized to contrast cognitive and behavior-analytic interpretations of cognition. There are also examples of behavioral relations in which a private stimulus other than that generated by a covert response exerts control over a public response. This is usually the case of verbal public responses concerning feelings that are partially under the control of interoceptive stimulation. One's response to an inflamed nerve, for example, may be seen as part of the pain itself. In this case, the pain is not a collateral product of contingencies, nor is it simply an observable stimulus or response. It is a behavioral relation of which a term is unobservable.

When relational phenomena in the field of privacy are considered, we may be dealing with a single relation, or sets of interlocked relations, that are more or less complex phenomena. Some psychological concepts, usually considered as related to privacy, refer to more complex phenomena than single relations. Concepts such as "depression" and "anxiety" usually refer to sets of relations that are in some way connected; for example, patterns of social interaction, self-observation repertoires, self-descriptive repertoires of bodily conditions, other public responses under the control of self-descriptions, and so on. What links all these phenomena to the field of privacy is the fact that for each of them there are relations in

which a private stimulation or a covert response may take part. These are not collateral products of contingencies of reinforcement, entirely unobservable phenomena, or simply a matter of a three-term contingencies. Probably, most of the phenomena described as psychological or treated as less complex for analytical reasons will be shown to be more complex in practice. Especially in clinical application of behavior analysis, what are dealt with as instances of private events may be these sorts of phenomena. I suggest that behavior-analytic therapists may unfold this complexity by examining these phenomena in the light of the principle of selection by consequences proposed by Skinner (e.g., 1981, 1990).

The Complexity of Private Events as Behavioral Relations, and Selection by Consequences

The complexity of behavioral phenomena may be addressed in several ways. Donahoe and Palmer (1994) have argued that complexity is the cumulative result of repeated selective processes:

Historical science accounts for complexity as the outcome of the three-step process of *variation, selection, and retention*. ... Repeating cycles of this three-step process are sufficient to produce organized complexity in the biological world and—we contend—in the behavioral world as well. (p. 18)

For the present purpose of analyzing the varying complexity of private events, I suggest that a productive alternative is to start with Donahoe and Palmer's (1994) interpretation, and add to it Skinner's (e.g., 1981) reference to phylogenesis, ontogenesis, and culture as the three levels of variation and selection of human behavior. I propose that the complexity of human behavioral phenomena related to privacy may be treated as a function of repeated selective processes involving participation of phylogenetic, ontogenetic, and cultural variables. I propose that

a continuum of complexity may be drawn from this perspective. At one end of this continuum, behavioral phenomena would be limited by phylogenetic relations, which include responses under the control of events that acquired stimulus functions in human phylogenetic history. Of course, this is an ideal end point in our continuum, because no actual relation may be interpreted solely as a product of phylogenesis. But some human responses, like the baby's sucking on the mother's breast or moving in the direction of the mother's voice, are clearly closer to this end of the continuum.

At the other end of the continuum, we have behavioral phenomena constituted of interlocked relations resulting from phylogenetic, ontogenetic, and cultural variables. The greater complexity here results not only from repeated selective processes but also from the types of variables involved in the control, especially the participation of verbal contingencies that make new interlocked relations possible. This is the case, for example, when one's anger is defined not only by respondent responses of the glands and smooth muscles but also by a set of relations that include a high rate of aggressive responses towards a controlling agent (cf. Skinner, 1953/1965, p. 362), self-observation responses, self-descriptive responses, and other responses controlled by self-descriptions, all presumably established by previous operant contingencies. In this case, a term of a relation (a stimuli or a response) may acquire a stimulus function to other responses. One's aggression response may be a discriminative stimulus to self-descriptive responses, which in turn may control discriminatively other responses towards the controlling agent or related stimuli. Contemporary behavior-analytic literature on verbal behavior (e.g., S. C. Hayes, Barnes-Holmes, & Roche, 2001) has argued that verbal stimuli (as in self-descriptions) may

show derived stimulus functions. When a person emits a verbal response like "I am very angry with this government!," the response, which is part of his or her anger, not only describes a bodily condition or the probability of aggressive behavior towards governmental authorities, but may also control a reduced probability of social responses towards individuals who share political views with governmental authorities. This is a much more complex anger than simply the one produced by phylogenetic or ontogenetic nonverbal contingencies.

At intermediate points of our continuum, there are phenomena defined in terms of more or less complex relations. One's depression may include responses (e.g., crying) elicited by conditioned stimuli. Or it may also include a high rate of complaints, a reduced probability of responses towards sources of reinforcement, low rates of social reinforcement, and so on. These are more complex behavioral phenomena than any phylogenetically selected pattern, but they are less complex than a depression that includes self-descriptions and additional responses under the control of self-descriptions (cf. Cavalcante, 1997; Dougher & Hackbert, 1994).

Note that according to the present interpretation, *complexity* means a type of *inclusiveness*. A more complex behavioral phenomenon is one that includes additional relations, at some point of our continuum, as a result of phylogenetic, ontogenetic, and cultural selective variables. Moving a hand away from the fire is less complex than cooking an apple pie, which is less complex than teaching new home keepers how to cook. The complexity here refers not to the selective processes (ontogenesis is not necessarily more complex than phylogenesis) but to the behavioral results of these processes. Also, it is not the principles of selection that are more inclusive in one or other selective level but the

resulting set of relations that come to define an occurrence of a private event.

Although the continuum is basically grounded on the three types of selective variables, its intervals are more numerous than the three sections based on those variables. The intervals of the continuum may be interpreted as corresponding to the repeated selective processes mentioned by Donahoe and Palmer (1994) and to the extent of the action of the selective variables. That is, behavioral phenomena found to be at the more complex section of the continuum (the one that includes relations produced on the three levels of variation and selection) may, in turn, show different degrees of complexity. Playing checkers, as an example, is less complex than giving a class on radical behaviorist epistemology, which in turn is less complex than describing that class and analyzing all the variables of which it was a function.

The proposal of a continuum of complexity based on the causal mode of selection by consequences may give rise to several discussions in the field of interpretation of complex human behavior. Considering the scope of this paper, it will suffice to consider some of its implications for the analysis of private events. A preliminary consideration concerning private events and selection by consequences is that, in general, phylogenesis provides unconditioned reflex responses; ontogenesis produces conditioned respondent relations and operant relations, some of which are under the control of conditioned stimulus that share a function with respondent relations (conditioned or unconditioned); a culture gives rise to self-descriptive responses, some of them partially under the control of bodily conditions and also verbal and nonverbal responses under discriminative control of self-descriptions.

A given private event may show components of one or more of those

levels. Some emotions are frequently interpreted as limited to respondent relations of a phylogenetic origin. For example, fear is sometimes interpreted as simply a set of respondent relations, physiological responses under the control of unconditioned eliciting stimuli. It will be argued later that fear often is a more complex phenomenon. But the reason why one is inclined, in some circumstances, to consider fear a less complex phenomenon is the fact that it is a type of "basic" emotion (Ekman, 1999/2004), that is, an emotion that is found in lower levels of complexity, a result of phylogenetic selective processes (although it may also assume more complex features). These emotions have also been mentioned in behavior-analytic literature as "primary" emotions (cf. Banaco, 1999; Millenson, 1967/1975). Some other emotions, like sorrow and guilt, seem to exist only as more complex phenomena, produced, at least in part, by social contingencies. Whether or not there are purely basic emotions and what constitutes the precise biological basis of emotions and feelings in general are controversial issues in biology and psychology. For the purpose of this paper, it suffices to note that what we call emotions may be more or less restricted to phylogenetic selective processes, more or less a product of additional ontogenetic and cultural selective processes.

It was mentioned above that when behavior analysts discuss private events, their verbal behavior is under the control of phenomena that show different degrees of complexity. Fear, for example, might be said to be a less complex feeling than sorrow. But each of these concepts, or each of the concepts related to privacy (or, at least, to feelings and emotions), itself encompasses phenomena with different degrees of complexity. A discussion of one of these, the concept of fear, will help to illustrate the idea that such concepts are themselves

verbal responses emitted under the control of phenomena that might be adequately treated with the previously discussed continuum of complexity.

"Fear" is a verbal response emitted under the control of more or less complex sets of relations. Take the example of a child's fear of his or her teacher. The child's fear may be limited to a set of conditioned physiological responses (e.g., a higher rate of heartbeat) elicited by the teacher's presence. As the child is exposed to aversive operant contingencies arranged by the teacher (e.g., criticisms and threats contingent on his or her participation in classroom activities), he or she may learn to escape or avoid being in the teacher's presence (e.g., "getting sick" on school days, hurting a classmate to be taken out of the classroom, asking the parents to be taken home, etc.). The child may additionally learn (when exposed to proper social contingencies) to observe his or her body and to describe him- or herself as afraid. The child may also learn, through verbal processes, that people who feel afraid of teachers are unintelligent people and that it is a shame to be unintelligent. In all these circumstances, we see instances of fear, but these instances are phenomena that clearly differ in complexity. In all circumstances, covert responses and private stimuli are involved, and that makes fear an instance of private events. However, the differences in complexity are so relevant that they recommend equally distinctive approaches to practically dealing with one's fear. Changing the teaching contingencies may be a sufficient intervention for an instance of less complex fear, whereas verbal therapy may be a necessary intervention for an instance of fear that includes the verbal relations mentioned above. Thus, to be more precise, fear is not an "it"; there are several "fears."

Once we agree that fear falls in the category of private events and that it

may also be a variable phenomenon, then it will be clear why some assertions about private events are quite controversial (e.g., Alford, Richards, & Hanych, 1995; Dougher, 1993b; Friman et al., 1998). As a representative private event, fear is not merely a bodily condition, an event, or a by-product of contingencies of reinforcement; nor is it simply inaccessible to public observation, nor is it sufficiently described as a set of organism-environment relations. The more we can understand the variability of fears, and private events in general, the better we can conceptualize them, and the more we are capable to intervene in consistent and effective ways, theoretically and practically.

Similar analyses might be developed for any emotional concept. Sorrow, happiness, sadness, excitement, and so on might be interpreted as instances of private events, but each of them is a verbal response emitted under the control of phenomena with varying degrees of complexity. Assertions about their causal status, their unobservability, as well as other features will depend largely on the specific occurrence of the event we come to examine.

The interpretation offered in this article is also compatible with some contemporary proposals by clinical behavior analysts who have addressed the problem of emotions. Recent behavior-analytic research has improved Skinner's original conceptualizations of verbal behavior and has led to the assumption that verbal processes may give rise to original sources of control of human nonverbal behavior. This recognition has led clinical behavior analysts to a discussion concerning the need for and the techniques and scope of verbal behavior therapy (cf. Anderson et al., 1997; S. C. Hayes, Strosahl, & Wilson, 1999; Wilson & Hayes, 2000; Wilson, Hayes, Gregg, & Zettle, 2001). One central issue surrounds the roles that should be

ascribed to verbal responses usually taken as descriptive of emotions and feelings. Research on the roles of these verbal responses has led to an assumption that self-descriptive repertoires often exert control over other forms of behavior:

When a human interacts verbally with his or her own behavior, the psychological meaning of both the verbal symbol and the behavior itself can change. This bidirectional property makes human self-awareness useful, but it also makes it potentially aversive and destructive. (S. C. Hayes et al., 1999, p. 44)

The topic largely explains the greater interest of clinical behavior analysts in private events and their effort to enhance our understanding of this subject matter. A review of this field is beyond the goals of the present paper and may be found elsewhere (Dougher, 1993a, 1994, 2000; Friman et al., 1998; S. C. Hayes et al., 1999, 2001; S. C. Hayes & Wilson, 1993).

In the next paragraphs I will briefly suggest that the interpretation for the complexity of private events provided in this paper is compatible with some concerns that arise from clinical investigation of private events, illustrated by the contrast between Skinner's (1974/1993) and Friman et al.'s (1998) discussions of the concept of anxiety.

Skinner (1974/1993) argues that anxiety is a condition felt under aversive contingencies (including a preaversive stimulus in the presence of which avoidance is not possible) that cause behavior directly. Analyzing one's behavior under those contingencies suggests that anxiety is at the most a bodily condition that needs not necessarily to be taken into account when practically dealing with the changes in overt behavior that are said to result from anxiety. After all, one's "behavior does not change because he feels anxious; it changes because of the aversive contingencies which generate the condition felt as anxiety. The change in feeling and the change in behavior have a common cause" (p. 68).

Friman et al. (1998) argue that Skinner's analysis, in terms of direct relations, is consistent only with occurrences of anxiety when verbal components play no central role. They assert, however, that there are circumstances in which anxiety is defined by a set of behavioral relations, "not fully explained by the direct contingencies in the present nor by those in the apprehensible past" (p. 145). In these occasions, anxiety may include "a variety of functional altering verbal components ... and related bodily states" (p. 145). This seems to be the case in many circumstances in which behavior therapists have to deal with anxiety: "Clinically significant anxiety appears to refer to avoidance responses whose initiating conditions are direct but very remote and whose perpetuating conditions are mostly derived" (p. 143). Relational responding would explain some components of the phenomenon. Some responses would be under the control of indirect contingencies (stimuli whose functions derive from indirect relations with other events—e.g., avoiding contact with unfamiliar people, described as unreliable in a social environment) explained in the light of verbal processes. Addressing these verbal processes, if they are important, would necessarily affect a clinical intervention, and that makes private events of the verbal sort an important issue for clinical behavior analysts:

A verbal account of emotion underscores the values (for clinical behavior analysts) of attention paid to the client's private events. Those events include potentially maladaptive verbal and nonverbal responses that are the direct and indirect results of socialization within a client's verbal community. (Friman et al., 1998, p. 146)

The issues raised by Friman et al. (1998) offer a distinctive view of the different degrees of complexity a private event reaches when it includes verbal components, which are a prod-

uct of a cultural level of determination. That is, whereas Skinner's (1974/1993) approach to anxiety in terms of direct relations corresponds to the analysis of feelings as behavioral relations produced by phylogenetic and ontogenetic variables, the type of verbally influenced anxiety mentioned by Friman et al. illustrates more complex feelings, which are also the product of cultural variables.

Based on the ideas presented by Friman et al. (1998), and before a complaint of anxiety that includes verbal responses of the type "being anxious is very destructive and must be avoided at any time," a clinical behavior analyst will focus on the functions of that verbal response in the control of other verbal and non-verbal responses. This perspective will probably suggest that the therapist should work to alter the stimulus functions of the verbal responses over other repertoires of the individual. In addition to that intervention, the therapist may have to deal with the direct relations that are part of the individual's anxiety. This need results from the fact that the verbal components of an individual's anxiety are an *additional* component, an interpretation that is in accordance with the inclusiveness view of complexity developed here. The need to deal with the direct relations of an ontogenetic origin is recognized by Friman et al., when they suggest that traditional exposure techniques in the treatment of anxiety should be employed, with the help of an analysis of the verbal aspects of one's anxiety.

To be fully effective, exposure may frequently have to include all, or at least more, of the events that functionally occasion maladaptive avoidance. Most anxious persons seek treatment to master being in the presence of the feared object or event while not thinking about or feeling fear. This means that the verbal aspect of fear is part of the feared event. To incorporate more of the phenomenology of fear in treatment, knowledge of the feared events and of the verbal behavior occasioned by the events is therefore needed. (p. 150)

Perhaps if the principle of selection by consequences is admitted as an effective approach to the features of complex private events (most of the phenomena described as psychological), it may serve as a strategy for developing the operational analysis Skinner (1945) called for. That is, perhaps for each psychological concept related to privacy, we should ask about the behavioral components or relations produced in each level of variation and selection. It will probably be noted that the phenomena these concepts describe present different degrees of complexity, and it is in this sense that they lack a scientific precision. However, asking about those behavioral components or relations might work both as a conceptual strategy, clarifying the classes of events that we may be dealing with, and an intervention strategy, clarifying the relations that need to be changed.

CONCLUDING REMARKS

Scientific psychology has been more productive in empirical matters than on conceptual work (see Machado, Lourenço, & Silva, 2000). Behavior analysis is not an exception, and private events certainly constitute one of the topics that require further conceptual examination (see Anderson et al., 2000; Moore, 2000). The tentative contribution presented in this paper is largely an interpretation of the issues, following Skinner's (1945) example. It is intended to be consistent with basic behavior-analytic tenets and to help in clarifying important aspects of private phenomena. It may be useful to those who have an interest in complex human behavior, especially in clinical settings. Thus, I believe it helps to clarify (a) the conditions of unobservability of private stimuli and covert responses, (b) the conditions under which private stimuli exert a function in self-descriptions, and (c) the different relations that define instances

of feelings or other psychological phenomena usually interpreted as part of human privacy.

The analysis developed suggests that privacy will be better understood once it is distinguished from the physiological conditions that make it possible and limit its scope. Once this distinction is made clear, and as long as we consider the different degrees of complexity that privacy relations may achieve, it should be possible to consider statements regarding privacy more adequately.

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