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Semicovert behavior and the concept of pain

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If I have understood him correctly, pain, according to Rachlin, consists of three elements, a pain stimulus, and two forms of overt pain behavior: the "respondent" behavior, which occurs as a reflex response to the pain stimulus and the "operant" behavior, which is reinforced insofar as its emission by the organism is followed by an alleviation or termination of the pain stimulus.

I take it that although he doesn't use the term in this paper, it is part of Rachlin's view that pain stimuli are normally "aversive" in the sense that they constitute "an establishing condition," to use Michael's (1982) term, whereby any operant that is followed by the alleviation or termination of the aversive stimulus is thereby reinforced. Rachlin then suggests, following Fordyce (1978), that the distinction between what he calls "sensory" and "psychological" pain can be accounted for in terms of the distinction between respondent and operant pain behavior.

For the purposes of this discussion I shall assume that the distinction Rachlin has in mind when he distinguishes between "sensory" and "psychological" pain is the same distinction as that which is drawn in commonsense terms between what is sometimes called "physical pain," where pain is a bodily sensation that is usually extremely unpleasant and distressing, and pain in the sense of the emotional reaction of acute distress when that reaction is evoked, not by pain qua bodily sensation, but rather by a thought, such as the thought that this pain is perhaps a symptom of some fatal illness.

If I am right in thinking that this is the distinction Rachlin has in mind, then it is difficult to resist the conclusion that his behaviorist theory of pain simply does not contain sufficient conceptual resources to enable him to do justice to the full complexity of the commonsense distinction.

I suggest that in order to do *that,* in addition to the pain stimulus and the overt and predominantly operant pain behavior which, as we ordinarily understand the matter, is an effect or "expression" of the pain, rather than part of it, we need to recognize the existence of three distinct varieties of behavior each of which is predominantly but not exclusively covert and predominantly but, with one exception, not exclusively respondent. These three varieties of semicovert behavior, as we may call them, are (1) attending behavior, (2) emotional reactions, and (3) self-directed verbal behavior or thinking.

Behaviorists of Rachlin's persuasion have traditionally been reluctant to acknowledge the occurrence of these types of semicovert behavior. This, I presume, is because the so-called introspective reports of human subjects, of which behaviorists have always been suspicious, deal for the most part with the covert and, hence, otherwise inaccessible aspects of such behavior. It seems to me that this reluctance is misplaced for two reasons.

In the first place, since this behavior is only partly covert, it follows that there are many occasions on which it consists partly, if not wholly, in publicly observable overt molar behavior whose occurrence even the most hardened behaviorist must acknowledge. Thus visual attending behavior normally consists in a complex pattern of head and eye movements, such as tracking, accommodation, and convergence, whose effect is to keep the retinal image of the object attended to in focus. Similarly, auditory attending behavior may consist in controlling the noise one might otherwise make oneself so as not to obscure the sound one is trying to catch. Olfactory attending frequently consists in sniffing, gustatory attending in savoring movements of the lips and tongue, and tactile attending in moving one's fingers over the surface of the object of attention.

The occurrence of an emotional reaction, in contrast to the overt operant behavior, like pain behavior, for which the emotional reaction creates the establishing condition, is much less easily detected at the level of molar observation than is attending behavior. Nevertheless, blushing in shame and embarrassment, weeping in joy and sadness, and the enlargement of the pupils in excitement and interest are overt, publicly observable aspects of such reactions.

In the case of thinking, most thoughts are uttered privately to oneself, without any actual movement of the voice musculature. People nevertheless often think out loud, not only on occasions

when thinkers intend to share their thoughts with others, but also when the thought is entirely self-directed.

The second point that needs making in this connection is that, even in those cases where the *occurrence* of the behavior is an entirely covert event, taking place presumably within the central nervous system, it is usually possible to determine objectively that a covert response *has* occurred by observing the change that has thereby come about in the establishing and other conditions controlling subsequent operant behavior.

Thus the effect of attending behavior is to increase what we may call the "salience of the stimulus or stimuli to which attention is paid and hence the vigor and accuracy of the discriminative control exercised by those stimuli over the subsequent operant behavior. The effect of an emotional reaction, like the distress involved in both senses of the word *pain*, is to set up an establishing condition whereby the alleviation or disappearance of the stimulus or state of affairs that evokes it acts as a reinforcer with respect to any behavior that is followed by it.

The effect of thought on subsequent operant behavior is much less easy to pin down than is that of attending behavior and emotional reactions. However, recent work on the contrast between human and animal responding on fixed-interval schedules of reinforcement (Lippman & Meyer 1967; Lowe 1979; 1983) is beginning to throw some empirical light on the difference between what Skinner (1969) calls "contingency shaped" and "rule (i.e., thought) governed" behavior.

If we try to relate these three types of semicovert behavior to Skinner's (1938) "respondent" and "operant" distinction, it appears that emotional reactions, as contrasted with the operants that "express" the emotion thereby generated, are invariably respondents. Attending behavior and thinking on the other hand both function in part as operants obeying the Law of Effect. However, both these forms of behavior appear to be subject to what we may call "a respondent override mechanism" that ensures that attention and thought are directed as much toward stimuli that are highly aversive as they are toward stimuli that are reinforcing with respect to operant behavior. Without such a respondent override mechanism the operation of the Law of Effect would have the maladaptive consequences predicted by the now long discredited theory of "perceptual defense," whereby the organism would systematically ignore aversive stimuli such as pain, as well as those discriminative stimuli which act as danger signals with respect to such aversive contingencies.

References

Fordyce, W. E. (1978) Learning processes in pain. In: *The psychology of pain,* ed. R. A. Sternbach. Raven Press.

Lippman, G. & Meyer, M. E. (1967) Fixed interval performance as related to instructions and to subject's verbalisations of the reinforcement contingency. *Psychonomic Science* 8:135-36.

Lowe, C. F. (1979) Determinants of human operant behavior. In: *Advances in the analysis of behavior,* vol. 1: *Reinforcement and the organization of behavior,* ed. M. D. Zeiler & P. Harzem. Wiley.

Lowe, C. F. (1983) Radical behaviorism and human psychology. In: *Animal models of human behavior,* ed. G. C. L. Davey. Wiley.

Michael, J. (1982) Distinguishing between discriminative and motivational functions of stimuli. *Journal of the Experimental Analysis of Behavior* 37:149-55.

Skinner, B. F. (1938) *The behavior of organisms.* Appleton-Century-Crofts.

Skinner, B. F. (1969) *Contingencies of reinforcement.* Appleton-Century-Crofts.