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2014 : WHAT SCIENTIFIC IDEA IS READY FOR RETIREMENT?

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Radical Behaviorism

Every student of psychology is taught that Radical Behaviorism was displaced by the cognitive revolution, because it was deeply flawed scientifically. Yet it is still practiced in animal behavior modification, and even in some areas of contemporary human clinical psychology. Here I argue that the continued application of Radical Behaviorism should be retired not just on scientific but also on ethical grounds.

The central idea of Radical Behaviorism—that *all behavior* can be explained as the result of learned associations between a stimulus and a response, reinforced or extinguished through reward and/or punishment—stems from the early 20th century psychologists B.F. Skinner (at Harvard) and John B. Watson (at John Hopkins). Radical Behaviorism came under public attack when Skinner's book *Verbal Behavior* (published in 1957) received a critical review by cognitivist-linguist Noam Chomsky in 1959 in the journal *Language*. One of Chomsky's scientific arguments was that no amount of exposure to language, and no amount of reward and reinforcement, was going to lead a dog to talk or understand language; whereas for a human infant, despite all the noise in different environments, language learning universally unfolds. This implies there is more to behavior than just learned associations. There are evolved neurocognitive mechanisms.

At times, this debate was portrayed as if it was between nativism (Chomsky clearly stated that just as an embryo grows, so language unfolds, under a universal genetic program) vs. empiricist proponents of tabula rasa (Skinner was painted as if he believed the newborn human mind was no more than a blank slate, although this was something of a straw man, since in at least one interview Skinner clearly acknowledged the role of genetics).

My scientific reason for arguing for Radical Behaviorism should be retired is not to revisit the now stale nature-nurture debate (all reasonable scientists recognize an organism's behavior is the result of an interaction of these), but rather because Radical Behaviorism is scientifically uninformative. Behavior by definition is the surface level, so it follows that the same piece of behavior could be the result of different underlying cognitive strategies, different underlying neural systems, and even different underlying causal pathways. Two individuals can show the same behavior but can have arrived at it through very different underlying causal routes. Think of a native speaker of English vs. someone who has acquired total fluency of English as a second language; or think of a person who

is charmingly polite because they are genuinely considerate to others, vs. a psychopath who has learnt how to flawlessly perform being charmingly polite. Identical behavior, produced via different routes. Without reference to underlying cognition, neural activity, and causal mechanisms, behavior is scientifically uninformative.

Given these scientific arguments, you'd have thought Radical Behaviorism would have been retired long ago, and yet it continues to be the basis of 'behavior modification' programs, in which a trainer aims to shape another person's or an animal's behavior, rewarding them for producing surface behavior whilst ignoring their underlying evolved neurocognitive make-up. Over and above the scientific reasons for retiring Radical Behaviourism, I have an ethical reason too.

Lori Marino at Emory University has conducted research at the interface of neuroscience and ethics and examined the life of an orca (a "killer whale") captured in 1983 in Iceland and brought to Sealand of the Pacific, a theme park in British Columbia, and later moved to SeaWorld Orlando in Florida. The orca was trained to do tricks, such as nodding his head in imitation of the trainer nodding her head, or waving his fin in imitation of the trainer waving her hand. The orca dutifully produced the behaviors to get the rewards (food) but, over the years in captivity, he was involved in 3 deaths of people. It has never been documented that orcas have killed a human in the wild, so this may have been a reaction to the Radical Behaviorists who were training this orca to show new behaviors, whilst ignoring millions of years of evolved social and emotional neurocognitive circuitry in the animal's brain, circuitry that does not just vanish in captivity.

Orcas are highly social. They live in family groups and complex societies comprised of 'clans', each with their own unique vocalization dialect which likely functions to strengthen group identity. They hunt in groups, a sign of their remarkable capacity for social coordination, and both males and females contribute to childcare. Kidnapping one individual orca and placing him or her in captivity not only isolates the animal from their social community, but it reduces their life expectancy, and causes signs of ill-health, such as the frequent collapse of the dorsal fin. The use of Radical Behaviourism towards such animals in captivity is doubly unethical, because of its lack of respect for the animal's real nature. The focus on shaping surface behavior ignores who or what the animal really is.

There may be ethical lessons here when we think about the still widespread use of behavior modification of humans in contemporary clinical settings: the need to respect how a person thinks and feels, respecting their real nature, rather than simply focusing on whether they can be trained to change their surface behavior.

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