

## Out with the Old, in with the New . . . Or So We Should Believe: A Review of J. E. R. Staddon's *The New Behaviorism, Second Edition*

Staddon, J, *The new behaviorism*. London: Psychology Press: Taylor & Francis Group, 2014. 2nd ed., pp. 282. ISBN-13: 978-1848726888

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By invoking his approach to the science of behavior as the new behaviorism, John Staddon dismisses the large variety of “behaviorisms” that have emerged over the past quarter century. Indeed, among the numerous options available for the modern behaviorist, such as biological behaviorism (Timberlake 1999), functional contextualism (Gifford and Hayes 1999), and logical behaviorism (Kitchener 1999), to name just a few (for a comprehensive review, see O’Donohue and Kitchener 1999), Staddon only acknowledges Rachlin’s (2014) teleological approach, and even that quite briefly. Despite neglecting the work of so many of his contemporaries, Staddon’s extensive contributions to both radical behaviorism (Staddon 1993) and the experimental analysis of behavior (Staddon and Cerutti 2003) warrants the attention of behavioral scientists of all stripes. The present review aims to focus on those features Staddon considers essential for TB while omitting mention of aspects already discussed in reviews of the first edition (Baum 2004; Zuriff 2001). I begin the present review by summarizing the contents of the second edition of *The New Behaviorism* in the section below.

### Overview

Staddon’s book comprises of four parts. Part One provides a history of behaviorism, from Watson’s declaration of “behaviorism” as a natural science to the thoroughgoing ap-

proach advanced by B. F. Skinner (for details regarding Skinner’s approach, see Schneider and Morris 1987). Staddon’s commentary on events that have shaped contemporary behavioristic thought is well worth reading for those unfamiliar with the rich history of the field. For those who have read the previous edition, however, there have not been any significant additions in the first part worth noting. As sufficient treatment of this section has been provided in previous reviews (Baum 2004; Zuriff 2001), Part One will not be discussed further. It is worth noting that among the behavioral pioneers highlighted in Part One, Staddon appears least critical towards the work of Clark Hull, a matter to which I shall later return.

No review of the intellectual heritage of behaviorism would be complete without acknowledging its most recognized proponent, B. F. Skinner, to whom Staddon dedicates the second part of his book. In Part Two, the author provides a critical review of the successes, philosophy, and failures of Skinner’s radical behaviorism, particularly regarding the insulation of radical behaviorism from mainstream psychology (cf. Skinner 1993). Staddon’s criticism of the Skinnerian approach is not new (Staddon 1973), and has been extensively addressed by others previously (Baum 2004; Zuriff 2001). Consequently, it will not be discussed further in the present review.

In Part Three, Staddon lays the foundation of his theoretical behaviorism, which has been significantly expanded upon since the first edition. Part Three argues that behavioral scientists need to develop parsimonious models that explain behavior in real time, inferring internal states when necessary to account for functionally equivalent histories (more on ‘internal states’ later). A primary goal of the current review is to summarize Part Three for behavioral scientists interested in mechanisms and theory but otherwise constrained by antitheoretical philosophical frameworks, as well as for those who may be interested in Staddon’s message were it not so critical of radical behaviorism (p. 3).

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The fourth and final part of the book is an informative, if somewhat unrelated, addition to the current edition inspired by reviews of the first edition (Zuriff 2001). Part Four provides commentary about some of the troubles facing American health-care, education and legal systems. Although this part could have been a separate text altogether, as the relationship with TB is unclear, it nevertheless constitutes as a significant addition to the present edition and will be discussed in the second half of the present review. I begin with a summary of ‘theoretical behaviorism’ in the section below.

## Theoretical Behaviorism

The oft-repeated message throughout Staddon’s book is that behavioral scientists need to formulate adequate behavioral theory. The key term here is ‘behavioral’, for Staddon appears well aware of the numerous dead ends that can emerge from mentalistic theorizing (but see Kaplan and Bechtel 2011). It should be noted that TB has been described as a revival of the Hullian approach by some (Malone 2004), although Staddon disagrees with this categorization and claims that the two approaches are significantly different when considered in terms of assumptions and predictions made:

Hull’s theory (was) not *parsimonious*: The number of assumptions equalled or . . . even exceeded, the number of things predicted. The purpose of a theory is to summarize. Skinner was absolutely correct when he raised no objection to theory as “a formal representation of the data reduced to a minimal number of terms” (emphasis in original). (p. 63)

According to Staddon, then, do his models represent the data with a “minimal number of terms”? Staddon states that TB satisfies Skinner’s dictum while avoiding the errors of early theorists like Hull (Skinner 1989). The author’s arguments in support of this notion are presented in three parts; first, I discuss what Staddon means by dynamic models. Second, I describe the prescribed conditions in which such models can emerge. Finally, I look at the critical role parsimony plays in the shaping and development of said models.

**Dynamic Models** Behavior is by definition *dynamic* – it is a constant, ongoing interaction between the organism and its context/environment. Furthermore, behavior cannot be independent of an organism’s *history*, and any behavioristic model must take an organism’s previous experiences into account. If we agree that a “model” functions to emulate and simplify an otherwise complex feature of nature (*vis-à-vis* behavior of an organism), it follows that an appropriate behavioristic model must take into account this dynamic and historical nature of behavior (e.g., response rate) in order to maximally account

for present and future activity (e.g., schedule performance). In developing such models, Staddon outlines the necessity of internal states, or so-called hidden variables, when trying to model behavior of any organism more complex than “a bacterium” (p. 176). The author is careful to distinguish his internal states as “intervening variables” rather than “hypothetical constructs,” where the former refers to a hypothetical state that need no referent in the physical world, whereas the latter, which refers to a hypothetical entity, typically does (MacCorquodale and Meehl 1948; Moore 2010). This distinction is key, for it suggests that Staddon’s intervening variables are neither postulated reflections of physiological entities (*contra* Hull), nor of mentalistic “representations, expectations” or “propositions” (*contra* cognitivism). They are theoretical placeholders for organism histories, constructed to predict and explain behavior, to be dismantled/modified in accordance with emerging data. The notion of internal states as summarized histories is critical when comparing with static, mentalistic “fundamentals” in nonbehavioristic models (again, see Kaplan and Bechtel 2011).

One example of a behavioristic model is the cumulative effects (CE) model (described on pp. 169–171), which can emulate response patterns of pigeons across concurrent variable ratio schedules with considerable precision. Staddon contends that the CE model is limited, for instance, in that it is unable to account for time-related phenomena, such as spontaneous recovery. Rather than completely discarding said model, however, or any notion of “models,” because one cannot satisfy every conceivable criterion would be akin to throwing the baby out with the diaper – a more useful approach would be to theorize alongside experimentation, gradually increasing the number and complexity of predictions made about the subject matter of interest as previous predictions are satisfied. Such an approach is concordant with the development observed in other natural sciences. In order to achieve such flexibility when building/refining models, Staddon advises the experimenter to approach his or her data without strictly adhering to any particular theory, which I elaborate upon further in the following section.

**Atheoretical Presumptions** In order to satisfy Staddon’s criterion for theoretical flexibility, the exemption of *a priori* presumptions about the subject matter under investigation is paramount. The researcher need not “fit” his/her findings to a pre-specified model, but rather adapt the model to accommodate the incoming data. In this manner, TB shares much with the data-driven approach favored by Skinner (1976), where a parsimonious account grounded around the emission of behavior in real time is preferred against a cumbersome mentalistic vernacular (Skinner 1945, 1950). In remaining atheoretical, the experimenter becomes free to develop methods and explanations in the service of reducing the number of theoretical assumptions made in relation to experimental predictions

met. Conversely, an antitheoretical perspective, while useful during the inductive stages of a science, can end up constraining the experimenter's perspective and even evoke a theoretical dogmatism of sorts:

By ignoring theory in general . . . [an] unconscious embrace of some particular theory is assured. So it is with those who concentrate on . . . the prediction and control of behavior to the exclusion of understanding. By refusing to think theoretically, [such individuals] are likely to accept an unexamined, and probably erroneous, theoretical and philosophical position. (Staddon, p. 177)

To remain atheoretical while thinking theoretically, Staddon recommends a strict application of Occam's razor to dispose of any superfluous notions when developing a model. I elaborate further on this prescription of parsimony in the following section.

**Parsimony** Staddon claims that the “sole purpose of science is to frame parsimonious laws and not to ‘explain mental phenomena’ with mentalistic ingredients” (p. 172), a claim that may resonate with many behavioral scientists. Simply relying on parsimony alone, however, to describe what an organism is doing “in the simplest possible way” (p. 172) can be problematic if one disagrees with what constitutes as “simple” (Walter-Ryan and Fahs 1987). For instance, if one disagrees with any notion of “internal state” in the first place, then the “simpler” account may very well be a molar one (Malone 2004). Many nonbehaviorists, however, appear uninterested in a molar account of behavior (Searle 2010) and favor theory to explain discrete, as opposed to temporally extended, events, for which Staddon's suggestion of parsimony is more relevant. Consequently, it becomes a question of theoretical elegance versus experimental parsimony when attempting to explain behavior, with cognitivists historically preferring the former and behaviorists the latter (Keijzer 2005).

In lieu of outlining whether one position is “better” than the other, a similar elegance-versus-parsimony disparity outside psychology may illustrate how the two approaches differ. By now, many have heard of “dark matter” and “dark energy” as hypothetical entities proposed to account for the asymmetrical decay in orbital velocities of stars far removed from the center of spiral galaxies. What may be less familiar to nonastronomers is that a more parsimonious account, utilizing fewer hypothetical assumptions, have yielded similarly accurate predictions of this decay without imagining any nondetectable “dark” energy/matter/aether (Modified Newtonian Dynamics, or MOND; see Bekenstein 2004). The division between MOND and dark matter theorists resembles that between advocates of TB and contemporary cognitivism; just as MOND proposes a conservative (but effective) revision of classical mechanics for astronomers and cosmologists wary of

unverifiable entities, TB aims to reorient psychological scientists wary of unverifiable “representations” and “expectancies” to a revamped behaviorism that subscribes to the importance of theory without adhering to any specific theory *per se*. Whether or not TB will yield a greater understanding of the behavior of organisms, only time will tell. At present, it suffices to say that Staddon's parsimonious approach has had a significant impact on the science of behavior (Innis 2008).

I now turn to the final part of Staddon's book where I summarize the author's commentary regarding selected features of the American legislative, health-care, and educational systems.

## Behaviorism in Society

**Justice and Punishment** Part Four begins with a discussion on the differences between social/redistributive justice (egalitarianism) and individual/personal justice (liberty). For instance, while redistributing resources across the socioeconomic landscape may be deemed a socially just act, the same action would be individually unjust from the perspective of the person/group whose resources are being taken away. Any attempt to therefore “design a culture” (p. 62) will inadvertently give the state the final say in dictating whose resources are to be taken and to whom they will be redistributed, occasioning the possibility of totalitarianism. Although this was neither the intent nor the methodology propounded by Skinner (Altus and Morris 2009), Staddon states that radical behaviorism, which focused almost exclusively on the technology of behavior, did not pay sufficient attention to the philosophical underpinnings of different forms of “justice” (but see Perelman 1979).

For example, let us consider Skinner's preference of positive reinforcement over punishment as an effective behavioral intervention (Skinner 1973, 1988); while morally laudable (Koukl 2013), Skinner's argument that the data did not favor punishment as an effective tool for behavioral change has long been contested (Staddon 1995). In contrast to Skinner, Staddon considers punishment justified if it benefits the social community, albeit at the cost of individual freedom; indeed, even racial profiling is considered “fair game” if it protects society at large (Staddon 2005). Personal responsibility for crimes committed in a sane state of mind needs to be acknowledged, of course, but simply advocating for punishment because it “works” is making the same error Staddon ascribes to Skinner. That is, “effective punishment” by itself cannot determine who should be punished as the boundary between individual freedom and social harm will always be subject to personal bias (e.g., Is smoking socially harmful? Staddon appears to think not; Staddon 2014). So when/how/whom should we punish? Staddon provides no clear answer, concluding with the unsurprising observation that rehabilitation

works for fewer people than deterrence in the context of punishment.

Unlike the aforementioned section on justice/punishment, Staddon's discussion on America's health care provides concrete suggestions about how change may be brought about. I turn to this in the section below.

**Health Care** Staddon's libertarian views influence his discussion of why many aspects of the American health-care system are defective, where excessive regulation of health-care facilities by centralized agencies is deemed a significant contributor to rising health costs. For instance, the "certificate of need" (CON; p. 238) is a state-mandated limitation on the construction of new medical facilities without the government's approval. Although initiated to offset the state's short-term contributions to Medicaid expenditures (the fewer facilities built, the lower the state's cost), CONs have the unfortunate side effect of restricting competition – enabling health-care providers to charge exorbitant prices while concurrently preventing other providers from entering the market. CONs have increased health-care prices across the nation, and Staddon's suggestion of repealing them to induce competition and drive down cost is worth consideration.

Other factors driving cost involve the schedule of incentives under which many health practitioners operate. First, given that medical profits in America are treatment-oriented rather than result-driven, practitioners are reinforced for overprescribing treatments and medications, particularly when no standard treatment is available. Alongside a fixed salary, many American doctors are compensated in direct proportion to the procedures they prescribe, culminating in a "health business" instead of a "patient care" culture (p. 250). By restricting physicians from operating on a piecework basis and thereby freeing them from purely materialist interests, Staddon contends that American physicians will be more susceptible to the socially reinforcing effects of increasing patient well-being rather than simply acquiring more wealth.

Second, acquiring the appropriate credentials for medical practice, while necessary, is currently regulated by physicians who are motivated to restrict the number of new incoming physicians in order to maintain/drive up medical cost for the patient-consumer. Staddon suggests that by replacing the physician majority in credentialing committees with nonmedical (but scientifically savvy) board members, the number of newly licenced physicians available to the public can increase, increasing supply and bringing down cost.

A third factor to consider is the pharmaceutical industry's focus on developing drugs for suppressing symptoms rather than curing conditions. Consider the dearth of research on new antibiotics or vaccines versus those for chronic conditions such as high blood pressure or mental health problems; a profit-driven industry is likely to invest in the latter, for providing a "cure" (as with a vaccine) as a one-off sale yields a

thinner profit margin than a "maintenance" drug (as with antidepressants), which can require the patient-consumer to continue purchasing the drug indefinitely. Staddon suggests stricter time-windows within which a company can hold on to its drug patents, after which the information becomes publicly available, bringing generic drug manufacturers into the market. Such an action can induce competition and consequently reduce prices. A positive side effect of such regulation could be that health-care providers would be motivated to focus on curative medicines which can have a greater demand in the short-term when compared to (typically) expensive medication for chronic conditions.

Among the range of problems identified, there are some positives Staddon notes, particularly the intensive nature of health-care internships, which inculcate a strong work ethic and personal responsibility in those who complete such training. In any case, Staddon may be correct that the problem with health-care is a matter of improper regulation (e.g., physician-run credentialing boards) and inappropriate controls (e.g., certificates of need) that drive up medical cost – the author's suggestions on how to counter these rising costs are grounded in sound economics and behavioristic analogies, and well-worth a read. The following section comprises the author's take on education practices.

**Education** The final discussion on education practices is lacking when compared with the preceding section on health care. In lieu of any useful suggestions, Staddon spends the majority of the section denouncing Skinner's attempts at "programmed instruction" (Holland and Skinner 1961), neglecting the large number of successful present-day applications that have since emerged as a direct consequence of Skinner's research (Gould and Brueckner 2007; Wleklinski 2004). This misinformed diatribe against Skinner is followed by an anecdote regarding a boarding school attended by Richard Dawkins (p. 229) which highlights the importance of variation when considering emission of novel behavioral repertoires in children in the service of education. Staddon discusses the importance of behavioral variation briefly, then concludes the text abruptly without suggesting how to develop "(the) engines of variation that motivate pupils and yield . . . creative learning" (p. 272) that he considers to be so vital.

## Concluding Remarks

Staddon provides a compelling case regarding the future direction of experimental behavior analysis based largely on his own work from the past quarter century. The behavioristic models Staddon proposes is an important and, I would argue, necessary step for behavioral scientists interested in formalizing patterns and mechanisms within the science of behavior. While quantitative modeling of behavioral data is neither new



nor unique to behavioral science, the assumptions underlying their construction are, which is why theoretical behaviorism should not be discarded as a pseudo-cognitivist approach for those unfamiliar with Staddon's assumptions, as many will be prone to.

Is this the new behaviorism? No, it is *a* new behaviorism, among many others, all of which considered together represents the complexity of contemporary behavioristic thought (cf. Rachlin 2014). Should you read the book? Absolutely. Staddon is a witty writer and an experimental juggernaut whose tremendous contributions to the science of behavior cannot be overlooked (Staddon 2001). While many radical behaviorists may find the constant criticism of Skinner off-putting and difficult to digest, I encourage them to bear with Staddon's rhetoric for underneath it all is a wealth of indisputable insights for the contemporary experimental psychologist.

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