*DIS-BELIEVING COGNITIVE PSYCHOLOGY: A REVIEW OF
STICH'S FROM FOLK PSYCHOLOGY TO
COGNITIVE SCIENCE*¹

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Any behaviorist who debates a cognitivist before a lay audience labors under a severe disadvantage. While the cognitivist is free to explain human action in terms of thoughts, beliefs, desires, and other mental concepts familiar to the listeners, the behaviorist cannot enjoy a similar rapport with the audience. Either behaviorists are seen as asserting the wildly counterintuitive claim that thoughts, beliefs, desires, and the like do not exist, or they must explain the exceedingly complex behaviorist position on the relationship between the mental concepts of everyday discourse and the concepts of a behavioral science (see Zuriff, 1985, chap. 10). Thus the behaviorist continually risks alienating others, or putting them to sleep, or both.

Now, however, we have a book by the cognitivist philosopher Stephen Stich that promises to even the score a bit. Stich's central thesis is that the concepts of everyday talk about the mind, that is, "folk psychology," and particularly, the concept of belief, do not properly find a place in modern cognitive psychology despite contemporary opinion to the contrary. In defending this thesis, Stich reveals some of the conceptual weaknesses in cognitivism that belie its current image as a philosophically justified, well articulated, and methodologically powerful scientific paradigm.

Thus, psychologists of every persuasion would do well to heed Stich's message. This is especially true for behaviorists. Not only can this book help deflect some of the criticism behaviorists may have recently experienced, but it may help cure the "philosophy lag" behaviorists have historically suffered. When early behaviorists looked for philosophical

support, logical positivism was in vogue. Many behaviorists who strongly allied themselves with logical positivism did not notice that philosophers eventually rejected logical positivism and moved on to analytic philosophy, or conceptual analysis. Now that behaviorists have belatedly discovered analytic philosophy, they are again in danger of falling behind as philosophers advance from analytic philosophy, which contents itself with a logical analysis of everyday concepts, to protoscience that bridges the gap between our everyday concepts and scientific concepts. Contemporary philosophers, such as Dennett, Fodor, and Stich, engaged in cognitive protoscience, examine not only the concepts of folk psychology but also the role these notions might play in the logical structure of a scientific psychology of cognition. These writers seek to provide the philosophical basis for cognitivism in much the same way that logical positivism was used to justify behaviorism. Of course, it is not unlikely that the development of cognitive psychology may be as independent of these philosophers as behaviorist psychology was of logical positivism (cf. Smith, 1983).

COGNITIVISM

Before discussing Stich's argument, it will be helpful to survey the general outlines of cognitivism. In contrast to behaviorism, the main concerns of cognitivism are the internal processes and states that mediate between the environment and behavior, and therefore, by cognitive standards, explain the behavior. A fundamental cognitivist premise is that these internal, or mental, events are computational; that is, they are formal manipulations of symbols. To say that a set of events, whether in the brain or in a computer, is computational is to offer an interpretation of those events; there is nothing intrinsically computational about a set of events. Thus, a cognitive theory

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will be a description of mental events under the interpretation that they are computational. What is needed, then, is a set of functions mapping mental states onto manipulable symbols. The resulting set of symbols along with a syntax and grammar are said to constitute a representation of the workings of the mind. A cognitive theory hypothesizes the mapping and the way the formulae of the representation are computationally interrelated. Typically, the theory will describe the latter in information-processing language. To explain behavior, the theory must also hypothesize how environmental effects (e.g., stimuli) and behavior are to be coded and entered into the computational network.

Causal relationships among mental states, between stimuli and mental states, and between mental states and behavior are mirrored by computational relationships among formulae in the abstract representation. A mental state is identified not by its particular material realization in the brain, but functionally, or, in other words, by the computational role played by the formulae representing it in relation to the other formulae of the theory. The central question in Stich's book is this: What is the relationship between mental states functionally defined in this way by a cognitive theory and the mental states of folk psychology? For example, will a fully adequate cognitive theory, in explaining Smith's opening the door, contain formulae representing Smith's belief that Jones is knocking at the door and his desire to see Jones?

REPRESENTATIONAL THEORY

A common assumption among cognitivists is that the mental states functionally individuated by cognitive theory will rather neatly match the mental states of folk psychology. The cognitivist can then best the behaviorist by promising that cognitive theories will eventually show in detail what we have known in general all along: Actions are caused by our thoughts, beliefs, desires, perceptions, and the like. It is precisely this promise that Stich denies.

The strongest version of this promise is advanced by what Stich terms the "strong Representational Theory of the Mind" (RTM) that underlies much of contemporary cognitive theorizing. According to this theory, the rep-

resentational entities of the abstract computational model have semantic content (e.g., reference, truth conditions). In some versions of RTM, they are sentences—so called "mental sentences." Interrelationships among the abstract formulae representing the causal relationships among mental states depend on the semantic content of the formulae. In turn, it is asserted or assumed that the semantic content of the formulae can be identified with the semantic content of the mental states of folk psychology. Thus, the strong RTM assures the congruence of cognitive and folk psychology. It assumes that the lawful generalizations of cognitive science will specify causal relations among mental states in virtue of their contents.

STICH'S OBJECTIONS

Thus, the case for the congruence between folk psychology and a fully developed cognitive theory rests on two closely related premises: (1) The mental states functionally specified by the theory will correspond fairly well to the mental states of folk psychology; (2) the workings of the theory will depend on the semantic content of its representational objects, and this content will correspond to the content of the mental states of folk psychology. The main thrust of Stich's argument is to show that neither of these assumptions is likely to be true. Through a careful and convincing analysis, he demonstrates that the folk concept of belief shows a vagueness and context sensitivity that produce (1) differences between the way we typically ascribe beliefs to persons and the way beliefs would be ascribed functionally; (2) an imprecision in our everyday ascription of beliefs posing serious problems for the RTM that generalizes over the semantic content of its formulae. A few of Stich's examples will help clarify these assertions.

Holism

By the "holism" of belief ascription Stich refers to the fact that our judgment on how to describe someone's belief depends, in part, on other beliefs that person is thought to have. Imagine, for example, (a) a child who says " $E = mc^2$ " but who lacks nearly all the other beliefs of the physicist who utters a similar statement, or (b) the senile person who says "McKinley was assassinated" but who no

longer remembers who McKinley is or what assassinations are. In these cases, and in the many others marshaled by Stich, we either decide the person does not have the belief contained in the utterance, or our intuitions are in conflict and we do not know how to decide. On a strictly functional ascription of belief, however, the person must be said to have the belief because the person's mental state of belief operates (i.e., has the potential to interact causally with other mental states) in the same way as the belief state of the person who typically has the belief. Thus, the functional ascription of belief does not correspond to the everyday ascription of folk psychology.

This holism of folk psychology also bodes poorly for the strong RTM. As holism suggests, our description of someone's belief depends on that person's other beliefs. We therefore become increasingly confused as to how to describe a person's belief as the person's set of other relevant beliefs (the "doxastic neighborhood") becomes increasingly divergent from ours. This means that any strong RTM theory that generalizes over the semantic content of a mental state will encounter serious obstacles in covering psychotic, brain-damaged, and retarded subjects whose belief systems differ significantly from those of normal individuals. Furthermore, the doxastic neighborhoods of children as well as those of members of exotic cultures are also sufficiently different from those of the adult Western psychologist to pose problems in assigning content to particular beliefs. Thus, a strong RTM is likely to fail in explaining the behavior of many of the subject populations of vital interest to psychology.

Reference

In our everyday folk psychology, beliefs are distinguished by their reference. For example, if two people both say, "Tom is a good golfer," and all their other beliefs are identical but one person refers to Tom Jones and the other to Tom Smith, we judge that the two beliefs are not the same. Yet on a purely functional account, the two people would be judged to have the *same* belief because the mental states of the two people causally act in the same way. The reference of a term is often determined by factors, such as the use of the term in the speaker's linguistic

community, that are not considered by a narrow functional theory.

Because reference depends on many factors, the reference of a term and therefore the content of a belief is often unclear. Consequently, a strong RTM theory, which generalizes over content, will prove ambiguous when applied to many important situations.

Causal Pattern

A third problem for the thesis of consistency between folk psychology and cognitive psychology arises from the relationship between a belief and its causes. A blind person and a sighted person may both believe that there is a black cat in the next room, and our intuition is that their beliefs are the same in content. Yet on a functional and purely causal account the beliefs are not the same. The potential causal relationship between the belief mental state and perceptual mental states is different for the two people. Here again, the functional account and the folk theory do not coincide.

As the causal interactions between a belief state and other mental states become increasingly different from those of the normal adult, our intuitions about the content of that belief state become increasingly confused. For example, we are unsure how to characterize the beliefs of young children, lower organisms, and psychotics. This is not only because their belief systems differ, as seen above, but also because the interactions among beliefs in these subjects differ as well. Again, a strong RTM that depends on belief content will not easily deal with these populations.

STICH'S POSITIVE THESES

Having rejected both the functional analysis of belief states and the strong RTM, Stich offers his own analysis of the folk concept of belief and an alternative cognitive theory. His analysis of what we are saying when we ordinarily say "S believes that p" is:

p.
S is in a belief state similar to the one which would play the typical causal role if my utterance of that [i.e., p] had had a typical causal history.

For our purposes, the most important feature of this analysis is that in ascribing a belief to S, we are making a similarity judgment—

we are judging the similarity between our state and S's state.

This analysis helps explain why our everyday ascriptions of belief display the characteristics of vagueness and context sensitivity discussed above. Second, it demonstrates why the folk concept of belief is an unlikely candidate for inclusion in a scientific psychology. Similarity judgments are sensitive to context; what are judged similar in one set of circumstances may not be in another. Moreover, judgments as to whether someone's state is similar to one's own state are obviously relative to the judge; what I judge similar to me may not be what you judge similar to you. A theory using descriptions relative to particular contexts and to particular observers in this way is not likely to be useful.

Therefore, the strong RTM, which makes use of the content of beliefs, will be undermined by this relativity and the resulting problems. Fortunately for cognitive psychology, Stich has an alternative—the Syntactic Theory of Mind (STM). In cognitive theories of the STM type, the cognitive states are mapped to abstract syntactic representational objects. The mapping is such that the causal interactions among cognitive states, as well as causal links with stimuli and responses, are represented by formal relationships among the abstract objects of the theory. In contrast to the RTM, the formulae of the STM need no semantics. The computational relationships among the representational formulae in the abstract model are determined solely by their syntax. Thus, the laws, generalizations, and predictions generated by the theory arise exclusively through the formal syntactic relationships of symbols within the theory and not from considerations of semantic content of mental states.

By divorcing cognitive theories from the content of beliefs, STM avoids all the problems faced by RTM and narrow functional accounts as sketched above. The mapping of STM from mental states to the abstract model is independent of folk ascriptions of belief and therefore escapes the vagueness and context sensitivity of folk psychology. Where then does this leave folk psychology?

At best, Stich suggests, folk psychology may provide practical "rules-of-thumb" for dealing with people, in the same ways that the rules

of cooking are a practical help in preparing food. Just as the rules of cooking are, or will be, explainable by chemistry, so the rules of folk psychology will be explained by a fully developed cognitive theory. At worst, folk psychology and cognitive theory may diverge so radically that the former will be considered false and fade away by the same route as alchemy and animism.

IMPLICATIONS

There is much of comfort for behaviorists in this book. First, Stich, using the language of cognitivism, shows in an interestingly novel way what behaviorists have long argued: The concepts of folk psychology, such as belief, are simply not precise and objective enough for a scientific psychology. Second, if Stich is right, cognitivism will eventually abandon folk psychology just as behaviorism did more than 70 years ago. For behaviorism this was an initial move; for cognitivism it will be forced by the progressive failures of RTM. Cognitivists will no longer be able to ridicule the behaviorist rejection of the mentalist language of everyday discourse.

Beyond this parallel between behaviorism and cognitivism, a more interesting convergence emerges between the two if Stich's thesis proves valid. Consider a cognitive theory of the STM type that Stich advocates. It will consist of an abstract formal system with syntactical rules for computational manipulations. Given an input, these computational manipulations will generate an output. So far, the theory is merely a formal calculus for determining what behavior will result from a set of environmental events, and it is not much different from the equations, intervening variables, and hypothetical constructs that a behaviorist might use in calculating response variables from environmental variables (see Zuriff, 1985, chap. 4). Where the behaviorist and cognitivist part company is at the point a cognitivist like Stich says of the theory that various abstract symbols represent internal "cognitive mental states." What exactly does this assertion mean?

In RTM, the assertion makes sense: The states represented by the theory correspond more or less to the thoughts, beliefs, desires, etc. of folk psychology and are properly called

"cognitive" and "mental." In a purely syntactical STM, however, the states represented are likely unrelated to the events referred to by folk psychology. The states are functionally individuated solely by a mapping to syntactic components of the theory, and not by the ascriptions of folk psychology. Adding the statement that the theory represents states that are "mental" and "cognitive" is a mere verbal ritual, a relic from earlier times when cognitivism was thought to rescue folk psychology. Once this ritual is dropped, the internal states mirrored by a STM cognitive theory are not too dissimilar from the hypothetical constructs, intervening variables, and mathematical equations of some behaviorist theories.

Yet differences between the two approaches remain. Whereas behaviorists emphasize the relationships between environment and behavior and have little to say about interactions among these internal states, cognitivists focus almost exclusively on causal relationships among internal states and ignore relationships between these states and the environment or behavior. Consequently, as a reading of Stich makes evident, cognitivist theories are woefully inadequate in selecting descriptions of the environment or behavior. Cognitivists have yet to address the problems of molar-versus-molecular, place-versus-response, action-versus-movement on the response side or the issues of distal-versus-proximal, potential-versus-effective, functional-versus-formal on the stimulus side. Behaviorists have struggled with these issues for decades (see Zuriff, 1985, chap. 3).

CONCLUSION

Although Stich's arguments are interesting, it is doubtful they will have much impact on the development of cognitive psychology. If the history of science is any guide, philosophy tends to be an epiphenomenon—influenced by science but having little or no effect on science in return. There are many ways in which cognitive psychologists can in practice maintain an allegiance to folk psychology while circumventing the problems Stich raises. One obvious strategy would be to continue to pay lip service to folk psychology while developing purely syntactic STM-type

theories in much the same way that behaviorists pay lip service to an action-neutral language while continuing to theorize in action language.

A second strategy, less obvious and more sophisticated, is for cognitive psychology to focus on experimental situations in which the ascription of belief is clear and unambiguous. Once an RTM cognitive theory is developed for these paradigm cases, it will be possible to map the belief contents of formulae in an RTM-type theory onto mental states and eventually onto neurological states. Using this theory and its mapping functions, it will be possible to *assign theoretical beliefs* to children, psychotics, and animals, for whom our everyday ascriptions of belief are unclear. The assignments will be on the basis of what is called for by the theory rather than the ascriptions of folk psychology.

One possible consequence of this move is that folk psychology and cognitive psychology will remain at odds in nonparadigmatic cases. Another more interesting possibility is that folk psychology will gradually change to accommodate the cognitive theory. Consider psychoanalysis as a model for the second outcome. As a result of his early findings and theorizing, Freud postulated that adults and infants have desires and beliefs contrary to common sense. Folk psychology did not allow for thoughts that were both outrageous and not consciously known to the alleged thinker. Yet the conflict between psychoanalysis and folk psychology was eventually attenuated, and today one hears talk of "unconscious beliefs" and "repressed desires" even at "folk" cocktail parties.

Regardless of the outcome of this issue, if you are interested in the current philosophy of psychology, I recommend this book to you. Two warnings: First, as a cognitivist, Stich assumes the cognitivist paradigm. If you are allergic to this kind of thinking, stay away from the book. Second, as a philosopher, Stich's style of argument is often purely conceptual, proving a point with far-fetched examples, the more empirically impossible, the better. This kind of reasoning often "drives psychologists up the wall," as Stich admits. If this description fits your reactions, you will find the book silly.

These caveats aside, the book has much

to recommend it. The writing style is clear and lively, and the organization is excellent. Most important, the ideas presented are original, well argued, and provide an insightful glimpse into the serious but usually unacknowledged problems at the very core of cognitivism.

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