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WHY DISPOSITIONS WON'T GO AWAY

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ABSTRACT: This commentary discusses the major claims and arguments presented by Field and Hineline (2008) against the general use of dispositional causal explanations in science and psychology and in favor of an alternative account that applies to cases in which causes and behavioral effects are separated over time. We conclude that their central claims and arguments are weak or implausible, and that the dispositional explanatory strategy emerges unscathed.
Key words: dispositions, causal, psychology, contiguity, science

Field and Hineline (2008) mount a brave attempt in arguing against the use of dispositional explanations in psychology, given that the underlying assumption involved (dispositions can and often do cause behavior) is so firmly ensconced in both folk and scientific psychology. As the authors also point out, one "advantage" of dispositional attributions is that they allow the assumption that causes and effects should be more or less contiguous to be maintained in those cases where the distal causes of behavior occur long before the behavioral effects are manifested.

Field and Hineline's (2008) strategy is to argue first that the assumption of contiguity between causes and effects is much overrated in psychology and should be thrown overboard, at least as a general rule. They go on to argue that one of the reasons why dispositional accounts are endemic in science is simply because they are lifted without much thought from their folk psychological home. And they point out several unfortunate consequences from overdoing dispositional accounts in science as well as in everyday life. Finally, they offer an alternative account, in which the need for making dispositional attributions is avoided for cases where causes are separated from effects over time for behavior.

We believe that it is important to critically analyze and test everything in science, especially entrenched beliefs that emanate from common sense (Fletcher, 1995). So we applaud Field and Hineline (2008) for taking on such a task. That said, we think many of the central claims are wrong and the arguments are weak or implausible. Thus, we conclude that the dispositional explanatory strategy emerges unscathed. We comment briefly on each major step in the argument proposed by Field and Hineline.

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Contiguous and Remote Causation

Field and Hineline (2008) argue that the assumption of contiguity between causes and effects "adheres to a 17th century conception of science" (p. 7), and they suggest or imply that such a conception was dropped in the 19th century in both physics and in Darwinian evolutionary theory. However, the principle of contiguity is alive and well in modern science, especially when cashed out in terms of linking causes and effects that are separated across space and time.

It is perfectly correct, as Field and Hineline (2008) note, that the notion of pervasive ether was first postulated to explain how light was transmitted through empty space, but was subsequently abandoned, and that Newton's theory of gravitation assumes action at a distance. However, this story is incomplete and misleading. Einstein rejected the notion of action at a distance, famously deriding it as "spooky" (Einstein, letters to Born, 1916–1955). Einstein's general theory of relativity (a cornerstone of modern physics) preserved the notion of causal contiguity by invoking the idea that matter warps the geometry of space–time, and that gravitational effects, like magnetic fields, are not propagated instantly (as Newton proposed) but at the speed of light. Another example of the principle of contiguity at work in modern physics is the search for the Higgs boson (one of the major tasks of the new $450 billion particle collider at CERN), which has been hypothesized to confer mass on other particles. The Higgs boson is a quantum component linked to the postulated existence of an invisible matrix or field that pervades the universe (a concept that, as has been pointed out, sounds a bit like the discarded notion of the ether; Lee, 2006).[1]

It is also true, as Field and Hineline (2008) argue, that an impediment to grasping Darwinian evolutionary theory is understanding the vast time scales involved. However, part of Darwin's genius in the *Origin of Species* (1859) was to show how the causal processes involved can be understood at the observable human scale, for example, by devoting a chapter to describing evolutionary processes at work in the breeding of domesticated species such as pigeons and dogs. Darwin clearly understood that any account of the origin of species had to describe processes that occurred in the often short lifetimes of individual animals and plants. His theory is a classic interactional account: stored dispositions (variability in traits) interact with situational factors (natural selection) to determine reproductive success and to provide the engine room that drives the evolution of species. Darwin also correctly intuited that the inheritance of characteristics required that information be stored in the organism and passed on to offspring in the reproductive process (although his own theory of pangenesis was, not surprisingly, short of the mark).

[1] It is, however, true that quantum mechanics is typically viewed as embracing non-locality and, thus, being inconsistent with general relativity theory. Indeed, the profound difficulty with reconciling quantum mechanics and general relativity theory is regarded as one of the main impediments to generating a unified theory for the fundamental forces in nature. The analysis and understanding of this topic is complex and well beyond the purview of this article (see Berkowitz, 2007).

In short, the notion that science, in realms other than psychology, has long since discarded supposedly old-fashioned notions of contiguity, or the need to establish intermediary causal links between events or processes that are separated by space or time, is false. Moreover, the ability to provide plausible mechanisms that link such putative causes and effects is one key criterion in distinguishing sciences from pseudosciences such as astrology, homeopathy, or intelligent design (all of which fail in this regard).

Dispositions

As Field and Hineline (2008) point out, two kinds of dispositional accounts have been advanced in psychology—dispositions as causes, and dispositions as patterns of behavior (see McCrae & Costa, 1995). Field and Hineline endorse the latter account and argue against the validity of the former category. Analyses of dispositions have often concluded that both kinds are routinely used in folk psychology, with the caveat that dispositions often constitute blends of the two categories. For example, talkativeness and punctuality seem like behavioral traits, beliefs are examples of pure (mental) causal dispositions, and traits such as insecure, honest, and stubborn seem to straddle both the mental and behavioral spheres (Fletcher, 1984).

Field and Hineline (2008) raise two arguments against the use of causal dispositional attributions in science. Their first argument is that scientific discourse tends to be framed by everyday language, which forces a focusing on either the organism or the environment. For example, they say "Given the bipolar constraint of explanatory language, one cannot simultaneously state dispositional and situational interpretations within the same sentence—indeed they do not readily cohabit the same paragraph or essay" (p. 47).

This bizarre claim is false with respect to both folk psychology and scientific psychology. Consider the perfectly ordinary and understandable sentences: "James is an anxious person who fell apart when under pressure in the job interview," "Mary is insecure, and when threatened verbally lashed out," and "Tom got an A because he is smart and the teacher liked him." Indeed, research suggests that naïve perceivers often happily invoke both situational and person-focused causes for the same behavior, depending on the context (McClure, 1998). A glance at any developmental or social psychological journal will similarly reveal that hypotheses and claims (typically expressed in the same sentence or paragraph) embodying interactions between dispositional and situational causes are commonplace. These are typically tested using standard experimental methods and analyses or using moderating analyses when continuous-level, correlational data are examined.

The second argument mounted is that overdoing person dispositional causal attributions (what Field and Hineline, 2008, call "privileging" dispositional explanations) can have pernicious effects in both folk and scientific psychology. We are happy to accept the points made in this respect, and we agree that the fundamental attribution bias or error can be problematic. However, this kind of argument does not rule out of court the merits of using dispositional attributions in

scientific models. Rather, it implies that they need to be used judiciously and with due caution.

Exactly the same kind of argument could be framed with respect to making situational attributions; that is, if such attributions are exaggerated or concentrated on to the exclusion of internal causes, then they are likely to misrepresent reality, allow moral responsibility to be denied, lead to lack of perceived control, and so forth. Such an argument would in no way impugn the scientific status of making such attributions. Any sound scientific principle, if pressed to extremes and allowed to exclude other important scientific values, is likely to produce weak models or nonsense. Consider, for example, the calamitous consequences created if the important value of parsimony was granted complete dominion in deciding the fate of any scientific theory or hypothesis.

Why Are Dispositions So Popular?

The main explanation offered by Field and Hineline (2008) for why dispositional attributions are pervasive in both folk and scientific cultures is concerned with the ways in which the verbal labels and language used are responses to systematic contingencies involving reinforcement. Field and Hineline (2008) also identify several benefits likely to be accrued in non-scientific verbal communities from the use of dispositional explanations, but they seem genuinely puzzled as to why scientific communities continue to favor dispositional explanations, given that science is in the business of "identifying causal relations" (p. 37). The only explanation proffered by Field and Hineline (2008) in this respect is that the practice of making dispositional explanations is so ingrained in folk psychology that it is appropriated for use in scientific discourse in an automatic, unconsidered fashion by scientists.

For example, Fletcher (1995) is given credit for arguing that folk psychological concepts should be examined critically and incorporated into science with great care, but then criticized for failing to "recognize the extent of dispositional bias within his own prose" (p. 97). The charge is specious. In both his 1995 book and in other publications (e.g., Fletcher, 1984, 1996) Fletcher has analyzed causal dispositions, as they are used in both folk psychology and science, and explicitly endorsed their usefulness in scientific accounts.

In a similar vein, Field and Hineline (2008) make the case that many authors who argue against the use of dispositions are guilty of self-contradiction because they "ironically" continue to make use of such attributions. However, there is no irony or contradiction involved, because we could find no evidence that any of the sources named explicitly argue for the sweeping abandonment of causal dispositional judgments in all contexts.

For example, Field and Hineline (2008) cite authors who variously discuss ways in which lay people overdo dispositional attributions (known as the fundamental attribution error; Choi, Nisbett, & Norenzayan, 1999; Gilbert & Malone, 1995; Miller & Norman, 1975; Miller & Porter, 1980; Ross & Nisbett, 1991; Taylor & Koivumaki, 1976; Wortman, 1976). Field and Hineline (2008)

then posit the irony involved on the grounds that the same authors use dispositions freely in their own explanations: "If it is an error, then they have participated in it while describing it" (p. 31). Yet none of these authors, to our knowledge, argue that dispositional attributions as such are invalid; indeed, many of them specifically endorse the practice. For example, Gilbert and Malone (1995) state that "dispositional inferences are easy to make and are undoubtedly correct on some occasions." (p. 35).

Turning next to evolutionary biology, Field and Hineline (2008) discuss Lewontin's (2001) claim that genes on their own do not determine individuals (p. 50), and that the organism and the environment are intimately linked together, rather than operating in an independent or oppositional fashion. Lewontin is then accused of inconsistency by going on to use a heavily dispositional stance. But there is no contradiction involved here. This is made clear in the passage from Lewontin (2001) quoted by Field and Hineline (2008), to wit:

> . . .genes, organisms, and environments are in reciprocal interaction with each other in such a way that each is both cause and effect in a quite complex but perfectly analyzable way. (p. 61)

Arguing that dispositions and features in the environment are locked into reciprocal and subtle causal connections does not in any way oblige the jettisoning of an ontological commitment to regarding dispositions (whether they be genes, personality traits, or memory traces) and factors in the environment as different entities. Take the example of a carburetor in an internal combustion engine. The only way of understanding the nature and origin of a carburetor is in terms of its functions and causal links within an operating system, which is itself designed to perform certain tasks. But the carburetor still exists independently of the rest of the internal combustion engine, and it can be described in terms of its size, metallic nature, and constituent parts. What goes for carburetors also goes for genes.

If our arguments are correct, this still leaves open the question: why do scientists of all stripes continue to make extensive use of dispositional explanations? We offer two explanations (not advanced by Field and Hineline, 2008). First, personal dispositions (of various kinds) do exert causal influence over behavior. This is not a hypothesis or a speculative claim, but a fact about the world so well established by multiple lines of evidence that to reject it is equivalent to doubting Darwinian evolutionary theory or the Copernican model of the solar system. This fact alone gives a powerful reason for why the practice is woven through both folk psychology and scientific psychology; namely, humans have evolved to perceive and explain human behavior in this way (see Haselton & Funder, 2006).

Second, the scientific strategy of making dispositional attributions has been enormously successful in the biological and human sciences. A few examples include genes in biology, the use of working models in attachment theory as applied to developmental and social psychology, the study of theory of mind in developmental psychology, the concepts of memory and schemas in cognitive psychology, the study of the evolutionary origins and nature of human desires and

goals in evolutionary psychology, and the understanding of the neurobiological underpinnings for emotions and cognitions in cognitive neuroscience.

In science, the initial postulation of underlying dispositional causes is typically tentative and may simply constitute a promissory note; namely, watch this space for future details and elucidation of the causal processes involved. To take the case of genes, there were logical and empirical grounds for hypothesizing the existence of Mendelian genes as units of inheritance in the early 1900s, but what they were and how they worked remained a mystery—a mystery slowly unraveled in the 20th century. The discovery of DNA by Crick and Watson in 1953 was, of course, a high point, but our understanding of the nature of genes and genetic mechanisms, and the links between genes and behavior, continue to evolve in fascinating ways.

What is true for the science of genetics is also true for the examples noted previously of successful programs of research and theorizing in the human sciences that rely on dispositional explanations. Humans are complex animals, and understanding the way in which information is stored in minds or brains, and the links between the external and internal landscapes, is almost always a scientific work in progress. Field and Hineline (2008) criticize dispositional explanations in psychology on the grounds that they are all too often loosely specified or vague about the details, but this is frankly to be expected, given the odd characteristics of the human animal and the complexity of the causal processes involved. We also note that the alternative account offered by Field and Hineline is scarcely less open to the same kind of criticism.

Conclusions

In psychology, accounting for how information is represented in the organism in some way, by altering or creating a disposition of some sort, is a standard strategy for explaining how exposure to an event at time one can influence behavior months or years later at time two. Field and Hineline's (2008) alternative account is couched in terms of a pattern of behavior (in interaction with the environment) that extends over time. We do not quibble with the argument that detecting such patterns is a valuable scientific aim. Indeed, we endorse it. But this is not an either/or option. The aim of detecting patterns in nature is perfectly consistent with the mainstream practice of building explanatory models that invoke causes and effects residing in both the organism and the environment and operating in interactional systems. Moreover, the detection of systematic patterns and phenomena is often the motivating precursor to explanations in terms of causal models and processes.

We agree that concentrating on causal dispositional explanations, to the exclusion of causes in the environment, is inimical to good science. However, precisely the same point is true for situational causes. Doing away with a working concept of contiguity between causes and effects, and abandoning models that invoke dispositions and provide mediating causal links between causes and effects

that are distant in time and space, would demolish most of contemporary science, including psychology.

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