The Special Consequence Condition of Confirmation

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What does it mean for an observation statement *O* to confirm a hypothesis *H*? One principle that might be thought to characterize the concept of confirmation was described by Hempel (1965, p. 31) as:

> *The special consequence condition*: If an observation report *O* confirms a hypothesis *H*, and if *H* logically implies that *C* is true (*C* is a logical consequence of *H*), then *O* also confirms *C.*

Confirmation, as the term is usually used in philosophy of science, does not mean *proving true*. Observations rarely have that power in science. What it means, roughly, is that the observation makes the hypothesis more plausible than it was before.

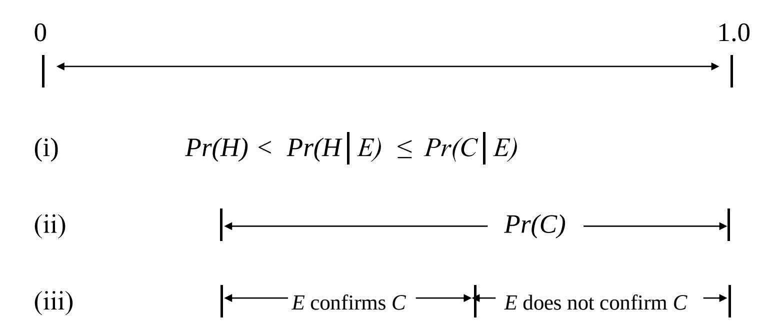
The special consequence condition, at first glance, seems plausible. When we get evidence that a theory is true, we thereby are entitled to be more confident that what the theory predicts will come to pass. This is often correct. But is it always? The answer is no – the special consequence condition is false. Here's a simple example that illustrates why. You are playing poker and would dearly like to know whether the card you are about to be dealt will be the Jack of Hearts. The dealer is a bit careless and so you catch a glimpse of the card on top of the deck before it is dealt to you. You see that it is red. The fact that it is red confirms the hypothesis that the card is the Jack of Hearts, and the hypothesis that it is the Jack of Hearts entails that the card will be a Jack. However, the fact that the card is red does not confirm the hypothesis that the card will be a Jack.

The above argument against the Special Consequence Condition does not depend on adopting any precise characterization of what confirmation is. But it is easily framed within one very popular account of confirmation – Bayesianism. For Bayesianism, a statement's plausibility is its probability of being true. And confirmation is therefore probability raising:

> *The Bayesian theory of confirmation*: *O* confirms *H* if and only if $Pr(H \mid O) > Pr(H)$.

$Pr(H \mid O)$ is the posterior probability of *H*; $Pr(H)$ is *H* 's prior probability. *O* confirms *H* precisely when *O* raises the probability of *H*; disconfirmation means probability lowering; evidential irrelevance means that the observation doesn't change the probability of the hypothesis. The general reason why Bayesianism is incompatible with the special consequence condition is depicted in the accompanying figure.[1]

Why Bayesianism entails that the special consequence condition is false. If *E* confirms *H*, the inequality between the first and second terms in (i) holds. If *H* entails *C*, the inequality holds between the second and third terms in (i). Given just these two facts, the value of *Pr(C)* could be anywhere in the interval shown in (ii). Where *Pr(C)* is located determines whether *E* confirms *C*, as shown in (iii).



The Special Consequence Condition arguably plays a role in the Quine/Putnam indispensability argument for mathematical realism (Sober 1993). The argument says that the empirical success of an empirical theory is evidence for the existence of the mathematical entities whose existence the theory entails. Consider a linear model that describes how temperature (y) and pressure (x) are related in a kettle filled with water that you might heat up on your stove:

(LIN) There exist numbers m and b such that y = mx + b.

Suppose you heat the kettle up to various temperatures, measure the pressure, and thereby get evidence for (LIN). LIN entails that numbers exist. The Special Consequence Condition concludes that your kettle observations are evidence for the existence of numbers.

[1] I am indebted to Kotzen (2007) for this way of representing the point.

Another context in which it is useful to consider the Special Consequence Condition is G.E. Moore's (1939) proof of the existence of the external world:

I have a hand.
If I have a hand, then physical objects exist.

Therefore, physical objects exist.

The argument just stated does not use epistemic concepts. But one might imagine Moore saying that I know that the conclusion is true, since I know that the premises are true, and that the conclusion follows from them. This is said to refute skepticism about the existence of the external world. But now think of an evidential analog of this argument. I have evidence for the first premise. I know that the second premise is true ("by definition"). Therefore I have evidence for the existence of physical objects. The Special Consequence Condition is the linking principle.

References

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