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Differential Focus in Causal and Counterfactual Thinking: Different Possibilities or Different Functions?

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Abstract

In *The Rational Imagination*, Byrne proposes a mental models account of why causal and counterfactual thinking often focus on different antecedents. This review critically examines the two central propositions of her account, finding both only weakly defensible. Byrne's account is contrasted with Judgment Dissociation Theory, which offers a functional explanation for differences in the focus of causal and counterfactual thinking.

Main Text

In *The Rational Imagination: How People Create Alternatives to Reality*, Byrne offers an account of why the contents of causal and counterfactual thoughts often diverge. Her account, based on the principles of mental models theory (MMT; Johnson-Laird & Byrne, 2002) has two central propositions. First, counterfactual and causal thoughts sometimes differ in content because the former tend to focus on enablers, whereas the latter tend to focus on strong causes. Enablers are necessary conditions for the occurrence of an effect ($C \Rightarrow A$), whereas strong causes are both necessary and sufficient for the effect ($A \Leftrightarrow C$). Second, enablers are consistent with three possibilities and tend to be represented by two, whereas strong causes are consistent with two possibilities and tend to be represented by one. Specifically, if antecedent A is an enabler of consequent C, then the possibilities $A \wedge C$, $A \wedge \neg C$, and $\neg A \wedge \neg C$ are consistent and the first and last

possibilities will tend to be mentally represented. For causes, the first and last of the same possibilities are consistent and only the first will tend to be represented. In Byrne's account, then, the basis for divergence in the contents of causal and counterfactual thinking is that the former focuses on necessary and sufficient antecedents, whereas the latter focus on necessary (but not necessarily sufficient) antecedents.

I agree with Byrne on the basics; namely, we share common definitions of enablers and strong causes, and we agree on the possibilities that are consistent with each. Our psychological accounts of causal and counterfactual thinking, however, diverge sharply. A fundamental difference is that Byrne traces differential focus in causal and counterfactual thinking to differences in the possibilities represented by enabler and strong-cause concepts, whereas Judgment Dissociation Theory (JDT, Mandel, 2003b, 2005) traces the differential focus to functional differences in these related but nevertheless distinct forms of goal-directed cognition. In JDT, the primary function of counterfactual thinking about negative past outcomes is to identify acts or events, particularly personally controllable ones (Mandel & Lehman, 1996), that would have been sufficient to prevent the actual outcome or consequentially-similar outcomes had they been taken or had they occurred. In contrast, the primary function of causal thinking is to identify acts or events that were sufficient to bring about the outcome as it in fact occurred under the circumstances. Byrne does not deny these functional differences—indeed, at points in her book, she alludes to them—but they remain on the periphery of her account.

Consider Byrne's proposition that counterfactual statements focus on enablers, whereas causal statements focus on strong causes. This distinction alone cannot explain the phenomenon of differential focus because strong causes are, by definition, also enablers. That is, strong causes constitute a subset of *C*-enablers that are also sufficient to yield *C*. Hence all strong causes should be candidates for counterfactual thinking, although some enablers would not be candidates for causal ascription. Byrne's first proposition begs the question, why would counterfactual thinkers focus on enablers that are not strong causes if the latter already meet the enabler criterion? If not functionally motivated, such behavior might seem a waste of scarce cognitive resources, perhaps even irrational.

Contrary to Byrne's account, the fact that counterfactuals meet the logical criterion for "enabling" seems to me largely incidental. Consider the statement, "If only the CIA hadn't botched their analyses, 911 would have been averted." According to Byrne, this counterfactual signifies that "botching" was necessary for 911, with emphasis placed on the necessary condition for the generation of the actual disaster. According to JDT, the counterfactual means something quite different; namely, that the absence of (or a reduction in) botching would have sufficed to have prevented the disaster. The emphasis here is on foregone sufficient disablers rather than actual necessary enablers. In this view, such counterfactual conditionals represent a form of *satisficing* (Simon, 1956) in which one identifies events, especially controllable acts, which would have been enough to undo a past failure. The emphasis on control in this account, sharing much in common with Collingwood's (1940) manipulation theory of causation, can also explain why counterfactuals often focus on factors other than strong causes even though the latter

satisfy the enabling criterion—namely, because manipulability is, at best, a weak constraint on causal ascriptions. The theoretical focus on sufficient disablers rather than necessary enablers is also supported by literature indicating that people are biased toward sufficiency testing for adaptive reasons (Friedrich, 1993; Klayman & Ha, 1987) and tend to interpret causatives in terms of sufficiency (Mandel, 2003b; Mandel & Lehman, 1998; Wolff, 2007).

Briefly, let me say a few words about Byrne's second central proposition, which links the distinction between enablers and strong causes to mentally represented possibilities. Her prediction that enablers (and, by extension, counterfactuals) conjure up possibilities $A \wedge C$ and $\neg A \wedge \neg C$, whereas strong causes only conjure up the former, fits the data. However, the reason for this prediction is unexplained. Indeed, the opposite prediction seems to me more plausible: if temporal order is preserved, as it tends to be in causal reasoning (Einhorn & Hogarth, 1986), then only one of the two models is congruent with enabling ($\neg A \wedge \neg C$ as $\neg A \Rightarrow \neg C$), whereas both are congruent with strong causes ($A \wedge C$ as $A \Rightarrow C$ and $\neg A \wedge \neg C$ as $\neg A \Rightarrow \neg C$). As I have proposed elsewhere (Mandel, 2003a), the reason why past-tense counterfactual conditionals appear to evoke two possibilities, whereas indicative conditionals tend to evoke only one, may be because the former are better than the latter at eliminating uncertainty. It is conversationally implied in counterfactual statements that both *A* and *C,* in fact, did not transpire. Thus, $\neg A \wedge \neg C$ is more than a mere possibility; it is an assumed fact. In contrast, indicative conditionals do not point to facts; only possibilities. Given that possibilities, not facts, constitute the basic units of mental representation in MMT, Byrne's account cannot accommodate this type of explanation.

In summary, Byrne provides a good overview of the mental models perspective on counterfactual thinking. In my own estimation, her book succeeds in presenting that account, even if the account itself reveals its own limitations.

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