Which Counterfactuals Matter? A Response to Beck

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In our article (Weisberg & Gopnik, 2013), we construct a unifying theory of imaginative processes, in which counterfactuals and pretend games share an underlying cognitive capacity. This theory allows us to explain why children pretend, why they create fantastical pretend worlds, and how pretend play and counterfactual reasoning can help children to learn about the causal structure of reality. In her response, Beck draws a distinction between two types of counterfactuals: general counterfactuals and real-world counterfactuals. General counterfactuals are the broadest class of counterfactuals, encompassing hypothetical futures, fictional events, and pretend games. Real-world counterfactuals are a subset of general counterfactuals, and they are defined by their relationship to the real world: They represent specific alternatives to events that actually happened, or minor modifications to specific elements of reality.

We agree with Beck that the class of counterfactuals is broad and that not all types of counterfactuals share the same features. But we wish to add further nuance to this argument by pointing out that it may be difficult if not impossible to draw sharp lines between categories of counterfactuals, because the space of counterfactuals is continuous. Counterfactuals can differ from each other and from the real world along a wide variety of dimensions, and this creates an infinite number of possible worlds to contrast with any given state of the real world (Lewis, 2000). Even if we define real-world counterfactuals as those that are “closest” to the real world because they only change one or a very small set of real-world facts, it does not seem possible to determine where the boundaries of this category are. At what point do real-world counterfactuals become dissimilar enough from reality that they cease to be real-world counterfactuals and become general counterfactuals? We believe that there is no straightforward answer to this question, highlighting the difficulty with drawing distinctions between types of counterfactuals.

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What are the implications of this argument for future research in this area? One fruitful set of research questions could examine the differences between all logically possible counterfactuals and the ones that people actually consider. Ruth Byrne’s systematic work on which counterfactual situations adults tend to construct when invited to reason counterfactually provides a first set of answers to these questions, outlining which dimensions of counterfactual space are most psychologically salient (Byrne, 2005). For example, adults are more likely to construct counterfactuals for events in the recent past than for events in the more distant past, and they are also more likely to regret actions that they have taken rather than instances of inaction. These results point to the importance of temporal distance and intentions in shaping how adults think of the space of counterfactuals. Future work could build on these results to examine similar issues in children. A second set of questions concerns the nature of the psychological demands on creating counterfactuals at various points in the space, which could in turn give us clues about when in development these abilities may appear.

Indeed, work by Beck and others suggests that the ability to calculate real-world counterfactuals does not seem to develop until around the age of 7 or 8 (e.g., Beck, Robinson, Carroll, & Apperly, 2006; Rafetseder, Cristi-Vargas, & Perner, 2010). However, some forms of general counterfactuals, notably pretend play, appear early in development. As Beck notes, this age disparity implies that real-world counterfactuals may not underlie children’s pretend games or their early-developing causal reasoning abilities, which may instead be more closely tied to general counterfactuals. Although this argument could also be taken to imply that real-world counterfactuals involve different underlying capacities than other forms of counterfactuals or than pretend play, we believe it makes more sense to think of all of these imaginative abilities as united and to look to other variables to explain the developmental lag. As Beck ably points out, real-world counterfactuals place heavier inhibitory demands on children, and we believe that this is the primary source of the developmental difference. Because these counterfactuals differ so little from reality, younger children have trouble inhibiting what they know about current reality to reason about a highly similar counterfactual possibility. Due to these information-processing limitations, it is relatively simple to construct tasks that will lead to failure. A more difficult and interesting question is how to phrase tasks so that even young can demonstrate the competences they have.

This line of argument raises a puzzle about exactly how a counterfactual’s distance from reality affects children’s abilities to think about that counterfactual. As just noted, for real-world counterfactuals, the similarity between reality and the counterfactual scenario makes it more difficult to think counterfactually. But for pretense, the similarity between reality and the pretend game seems to make it easier. The earliest (hence presumably easiest) forms of representational pretend play involve object substitution, especially with objects that share many features in common with their referents. Children who are just beginning to pretend find it easier to produce and comprehend pretend actions which use props that have many similarities to their referents (using a stick as a pencil) than those that are physically different (using a ball as a pencil) or than entirely invisible objects (Bigham & Bourchier-Sutton, 2007; Elder & Pederson, 1978; Jackowitz
& Watson, 1980). This developmental sequence strongly implies that similarity between reality and pretense facilitates the construction of the kind of counterfactual representations used in pretending.

What is the source of this difference between counterfactual thinking for real-world counterfactuals and counterfactual thinking for pretense? One possibility is that pretending and constructing real-world counterfactuals simply involve different mental processes. As noted above, we find this unlikely, both given the many other computational similarities between counterfactual and pretend reasoning and given the difficulty of defining a separate category of real-world counterfactuals. Instead, we believe that there are two other main sources of difference. First, unlike the kinds of counterfactual scenarios used in psychological research, object substitution pretense involves the implicit evocation of a counter-to-fact representation. Children may be able to implicitly reason about close possible worlds before they are able to explicitly do so. Second, reducing the distance between reality and the possible world may make pretending easier because of the presence of a prop. Having a physical object with many of the same features as the pretend object can help children to navigate across the boundary between reality and pretend. No such object exists in the counterfactual cases, which means that the child must construct the representation of the real-world counterfactual without the help of a physical reminder. Whatever the reason, considering the nature of the distance between reality and a counterfactual world may lead to new insights into the development of counterfactual thinking and of the myriad mental processes that rely on this important ability.

References