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The influence of an inherence heuristic on scientific explanation

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Abstract: What cognitive processes underlie scientific explanation? Although scientific reasoning is often careful and methodical, we hypothesize that it is also influenced by an intuitive explanatory process: namely, an inherence heuristic (Cimpian & Salomon, 2014, BBS). The central claim of the inherence heuristic proposal is that, when people construct explanations, they oversample inherent facts about the entities whose behavior they are attempting to explain. We investigated the influence of this heuristic process on explanations for novel and historical scientific phenomena in chemistry, biology, and physics. Participants were provided with short vignettes describing unexpected outcomes of experiments and were asked to explain these outcomes. As predicted, explanations were couched primarily in terms of inherent features of the entities involved. Importantly, this was so even though such features were not mentioned in the vignettes but extrinsic factors were (e.g., high altitude, unusual location). These findings elucidate the psychological processes that underlie scientific explanation.