

## Forum

### Lay people's beliefs about creativity: evidence for an insight bias

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**Research finds that creative ideas are generated by two cognitive pathways: insight and persistence. However, emerging research suggests people's lay beliefs may not adequately reflect both routes. We propose that people exhibit an insight bias, such that they undervalue persistence and overvalue insight in the creative process.**

'Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something.' – Steve Jobs

'Genius is one percent inspiration and ninety-nine percent perspiration.' – Thomas Edison

#### Creative idea generation

Creativity is the generation of ideas that are both novel and appropriate [1,2] and it is the crucial first step of the broader creativity–innovation process, which also includes idea evaluation, selection, and the implementation of ideas into final products, solutions, or outcomes [1]. For the past century, researchers have studied creativity with the goal of answering the question: how are creative ideas generated? More recently, researchers have begun to turn their attention to people's beliefs about creativity. In other words, how do people think creative ideas are generated?

Do people think, like Steve Jobs, that creativity is simply noticing things? Or, like Thomas Edison, do they think creativity requires effort and hard work? In this forum we describe recent research on people's beliefs about how creativity works and examine why these beliefs matter.

Research finds that creative ideas are often generated via two cognitive pathways: persistence and insight. Persistence refers to the effortful, deliberate, and sustained search for creative solutions [1,3]. In contrast, insight refers to the effortless and unexpected comprehension of new ideas or solutions, colloquially called the 'A-ha!' moment [4,5]. People report both pathways in their subjective experiences of creativity and both pathways promote creative performance [3,4]. Yet, emerging research suggests that people's beliefs about the creative process do not reflect these dual pathways. It appears that people associate creativity with effortless insight and undervalue persistence; a phenomenon we refer to as an insight bias. We next present evidence for an insight bias, consider the mechanisms behind it, and discuss the implications of these (faulty) beliefs.

#### From performance to perception

What might an insight bias look like? We propose that an insight bias would be supported by evidence that people's beliefs about creativity systematically mispredict creative performance such that people undervalue persistence and overvalue insight.

Initial evidence of an insight bias comes from research that compared people's beliefs about the value of persistence for creativity against actual performance. After an initial period of idea generation, people predicted how many more ideas they would generate during a second round of idea generation and then they actually generated ideas a second time. This research found that people consistently underestimated how many ideas they would generate during the second round [6]. That is, they underestimated

the value of persisting. Building on this finding, other research investigated people's beliefs about how creativity changes over time. People were asked to predict the trajectory of their creativity across an ideation session and then to actually complete the session. These studies found that whereas creativity actually increased or stayed the same across the session, people consistently predicted their creativity would decline [7]. Finally, problem solving research has found that people overestimate how quickly they exhaust a problem's solution space (i.e., the set of reasonable solutions to a problem). In one study, people estimated that they generated 75% of the solution space when in fact their ideas covered only 20–30% [8].

Other research more directly compares beliefs about insight and persistence. For instance, people believe creative ideas are more likely to be produced by cognitive processes related to insight (e.g., cognitive flexibility) than processes related to persistence (e.g., deliberate, persistent thinking) [9]. One study found that people believe creativity is stimulated more by defocusing (i.e., not working on the problem) than by focusing (i.e., deliberately working) on the task. However, when asked to recall and describe a recent idea generation experience, they reported the opposite: their idea was more often preceded by focusing than defocusing [9]. The preference for insight resonates with research on beliefs about the origins of talent. This research finds that people favor entrepreneurs whose ideas stem from innate talents (e.g., from traits related to genius and insight) over entrepreneurs whose ideas result from effort and hard work. In one study, people even preferred an innately talented entrepreneur with fewer achievements over a hard-working entrepreneur with more achievements [10].

The studies summarized above provide evidence that people undervalue persistence and overvalue insight. Understanding

### Box 1. Questions for future research

How are insight/persistence beliefs related to the metacognitive experience of more effortful versus less effortful cognition? Example: Are insight/persistence beliefs influenced by cognitive load or working memory capacity?

Do insight/persistence beliefs influence an idea generator's self-judgments? Example: Does generating an idea via insight versus persistence influence people's judgments about their abilities, motivations, or creativity?

Do insight/persistence beliefs influence judgments of other people? Example: Does an idea generated via insight versus persistence influence evaluations of the idea generator's creativity or abilities?

Do insight/persistence beliefs influence the later stages of the creativity–innovation process? Example: Does whether an idea was generated via insight versus persistence influence how the idea is evaluated or the likelihood that the idea is selected or implemented?

these (faulty) beliefs is important because they influence how people choose to engage in creative work. For instance, undervaluing persistence and believing one's best ideas come early leads people to disengage from creative work more quickly, which limits creativity [6,7]. Valuing insight leads people to expect more creativity when in the bathtub than at one's workstation [9] and to discount the value of others whose accomplishments draw on persistence rather than innate genius [10].

What causes the insight bias? One explanation relates to the subjective experience of idea generation itself. Specifically, the feeling of effortfulness experienced while generating ideas (also called metacognitive fluency) [11]. Generating ideas via insight feels less effortful and less mentally exhausting than generating ideas via persistence. This more pleasant experience of insight, versus persistence, leads people to think and feel more positively about insight [6,11]. For example, the research where people underestimated how many ideas they would generate while persisting [6] found that the feeling of effortfulness experienced during initial idea

generation accounted for the discrepancy between predictions and performance. Similarly, people's belief that creativity declines across an ideation session [7] was explained by people's pessimism about the difficulty of producing ideas over time. Future research should continue to test this and other mechanisms.

### Concluding remarks

We presented initial evidence that people's beliefs about creativity undervalue persistence and overvalue insight. We see a number of directions for future research (Box 1). Most basically, future research should continue to build evidence for the insight bias. This could involve studies that investigate persistence and insight beliefs separately or relative to one another. Future work can also investigate additional consequences of an insight bias beyond creativity, such as how these beliefs influence self-judgments or social judgments of other idea generators. Finally, future work could also investigate whether the insight bias influences other stages of the creativity–innovation process such as how ideas are evaluated or selected for implementation. Recognizing when people's creativity beliefs diverge from the reality of

how creativity actually works can deepen our understanding of the creative process and promote creative performance.

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