The Creativity of ADHD

More insights on a positive side of a "disorder"

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Mar 6 · 5 min read ★

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Attention-Deficit/Hyperactivity Disorder (ADHD) is typically described by the problems it presents. It is known as a neurological disorder, marked by distractibility, impulsivity,

and hyperactivity, which begins in childhood and persists in adults. And, indeed, ADHD may have negative consequences for academic achievement, employment performance, and social relationships.

But ADHD may also bring with it an advantage: the ability to think more creatively. Three aspects of creative cognition are divergent thinking, conceptual expansion and overcoming knowledge constraints. Divergent thinking, or the ability to think of many ideas from a single starting point, is a critical part of creative thinking. Previous research has established that individuals with ADHD are exceptionally good at divergent thinking tasks, such as inventing creative new uses for everyday objects, and brainstorming new features for an innovative cell phone device. In a new study, college students with ADHD scored higher than non-ADHD peers on two tasks that tapped conceptual expansion and the ability to overcome knowledge constraints. Together with previous research, these new findings link ADHD to all three elements of the creative cognition trio.

Prior knowledge can be an obstacle to creativity. When we look to a prior model or example for inspiration, we may actually become stuck: designers refer to this as “fixation.” In creative generation research, when participants are given examples before a task that requires them to invent something new, such as a new toy, their inventions tend to incorporate aspects of the examples — and thus are less novel. The ability to overcome recently presented information is therefore essential to creative thinking.

Similarly, knowledge of the world can stunt one’s ability to imagine it differently. For instance, if asked to invent an animal or fruit that might exist on another planet, most people would start by thinking of a typical animal or fruit on Earth and then modify it somewhat into an “alien” version. Research suggests that when people invent alien creations based on specific Earth examples, the creations are rated as less original compared to those not inspired by specific examples. The key to being creative under these conditions is conceptual expansion, or the ability to loosen the boundaries of concepts. For instance, a paperclip is designed to hold papers together. By conceptual expansion, one might think beyond this definition and imagine a paperclip as something else — such as a tool to pry open the battery compartment of a wristwatch. In creating an alien animal, one might assume that the animal would need to be bilaterally symmetrical, as most Earth animals possess this attribute. Conceptual expansion might

allow one to imagine an animal with an asymmetrical form, which differs from a typical Earth animal.

Evidence suggests that ADHD may offer some protection from the constraining effects of knowledge. In a study of adolescents, a group with ADHD was compared to a group of non-ADHD peers on a toy invention task. Participants were first shown a set of example toys that shared specific features (e.g., a ball), then asked to invent new toys that were very different from any existing toys. The toys invented by the ADHD group included fewer elements of the task examples compared to toys created by the ADHD group. In the same study, there were no differences between the ADHD and non-ADHD groups on a conceptual expansion task. However, a study of college students found that, compared to non-ADHD peers, ADHD students showed a broader scope of semantic activation — which is the "turning on" of concepts and ideas that are stored in memory — and is correlated with conceptual expansion in other research. Given evidence that linked ADHD to higher divergent thinking and ability to overcome the constraining effect of task examples, it seemed intuitive to look more closely at the relationship between ADHD and the third element of creative thinking, conceptual expansion.

I compared college students with and without ADHD on two tasks. In the first, I told participants to imagine they worked for an advertising agency and that they'd been asked to invent names for new products in three categories (pasta, nuclear elements, and pain relievers). For each category, six examples were provided that shared certain endings (e.g., pain relievers ending in –ol, such as Midol, Tylenol, and Panadol). I then instructed participants to invent a name for a new product in each category without using any aspects of the examples provided. And then, to explore conceptual expansion, I asked participants to draw and describe a fruit that might exist on another planet very different from Earth. The creations were to be as creative as possible and not duplicate any fruit that existed on Earth.

As expected, the ADHD students were less constrained by task examples on the product label invention task; compared to non-ADHD peers, ADHD students were less likely to include the example endings, yet invented labels that were equally descriptive of the product category. On the alien fruit task, the ADHD students invented fruits that were rated as more original and less representative of Earth fruit, compared to non-ADHD students. And while the groups were comparable in their inclusion of typical fruit

features, such as seeds and stems, the ADHD students were more likely to include atypical features such as antenna, tongues, straws, and hammers. The ADHD students also demonstrated higher conceptual expansion by violating conventional boundaries of the fruit category — for instance by making the fruit poisonous or adding properties of non-living things such as tools. Similar results have been reported for gifted individuals in a non-ADHD population.

At first glance, non-conformity and conceptual expansion may not sound very impressive. But, in the context of creative innovation, a small change may unlock a breakthrough. Take the sewing needle, for example. The basic design (eye on the blunt end for threading) dates back to our Denosoyan ancestors, at least 50,000 years ago. Then, in the early 1800s, inventor Balthasar Krems flipped that design upside-down to create the world's first eye-pointed needle — which paved the way for the sewing machine.

ADHD may create difficulties for individuals in many contexts that required focused, sustained attention — such as school, where students are expected to sit still and pay attention. On the other hand, the same distractibility and chaotic mind can give people with ADHD an edge when it comes to creative, original thinking. This new study suggests that ADHD may be especially beneficial when the goal is to create or invent something new without being locked into — and constrained by — old models or conventions. The innovative, original thinking style of people with ADHD may be a great fit for innovative fields where it's an advantage to be on the cutting edge.

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