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## Brilliant: The Science of Smart

By Annie Murphy Paul

PSYCHOLOGY

# What the Jazz Greats Knew About Creativity

Learning how to break down inhibitions and prime your senses leads to more creative thinking

By [Annie Murphy Paul @anniemurphypaul](#) | March 21, 2012 | [Add a Comment](#)

The improvisational flights of jazz greats like Louis Armstrong and John Coltrane are so transporting that they can seem almost otherworldly — especially when the listener is aware that these musicians weren't following any score, but were making up their riffs in the moment. New research on what happens in the brain when we improvise, however, is showing that it is very much an earthbound activity, grounded in the same neural processes at play in every one of us when we engage in spontaneous self-expression, like a conversation with a friend.



Gai Terrell / Redferns / Getty Images

John Coltrane performs in the 1960s

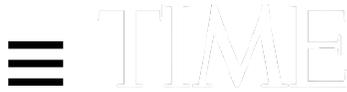
“Creativity is far from a magical event of unexpected random inspiration,” wrote researchers Charles Limb and Mónica López-González [in an article published in the journal \*Cerebrum\* last month](#). “Instead, it is a mental occurrence that results from the application of ordinary cognitive processes.” Many students and employees are discovering this for themselves as the techniques of musical and dramatic improvisation move into educational and workplace settings, where they're used to boost the creativity of people who've never picked up a saxophone in their lives.

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Limb, an associate professor otolaryngology at the Johns Hopkins School of Medicine who is also on the faculty of



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magnetic resonance imaging (fMRI) machine. The musicians played a tune they had memorized and then a tune they invented on the spot.

With the shift to improvisation, the researchers noted the appearance of a distinctive pattern of brain activity. The dorsolateral prefrontal cortex, a region associated with careful planning and self-censorship, became dormant, while parts of the brain connected to the senses — hearing, seeing, feeling — became especially lively. Most interesting, a brain area called the medial prefrontal cortex, linked to autobiographical storytelling, also showed increased activity. Inhibitions released and senses primed, these musicians were engaged in an act of self-expression, using the music to communicate something deep about themselves.

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We don't have to be professional pianists to reap the benefits of improvisation, as [a study published in the journal \*Psychology of Music\*](#) in 2008 shows. In this experiment, 6-year-olds were divided into two groups: one group received music lessons enriched with improvisatory activities involving their voices, their bodies and musical instruments, while the other attended classes that were “didactic and teacher-centered.” A measure of creative thinking in music was administered to both groups before and after the six-month series of lessons. The results: children who'd engaged in improvisation showed significant increases in the creativity of their thinking and the originality of their music, while pupils who attended the conventional classes did not.

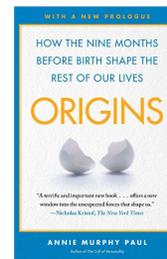
Improvisation can also bring fresh thinking into the workplace. The Second City, the famous improv-comedy troupe in Chicago, now has a corporate arm devoted to improving business communication skills through the same techniques its actors use to make people laugh. “Business isn't neatly scripted,” notes Tom Yorton, chief executive officer of [the Second City Communications](#). “It's an unpredictable and unwieldy act of improvisation.” The organization's trainers lead groups of coworkers, or “ensembles,” through exercises designed to break down inhibitions, heighten attention and ease self-expression — valuable aims, research suggests, for anyone who wants to come up with a riff the world hasn't heard before.

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Paul is the author of *Origins* and the forthcoming book *Brilliant: The New Science of Smart*. The views expressed are solely her own.



Paul's latest book is *Origins: How the Nine Months Before Birth Shape the Rest of Our Lives*.