

Imagination Institute at Penn Awards Nearly \$3M to Develop ‘Imagination Quotient’

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July 13, 2015

The [Imagination Institute](#), based at the University of Pennsylvania’s [Positive Psychology Center](#), has announced nearly \$3 million worth of grants to researchers at 16 institutions. The grants are aimed at the development of better ways of assessing and promoting imagination and creativity.

Funded by the [John Templeton Foundation](#) and administered by [National Philanthropic Trust](#), the Imagination Institute was founded in 2014 as a way to stimulate scientific research on imagination. It is led by Executive Director Martin Seligman, who is also the director of the Positive Psychology Center, and Scientific Director Scott Barry Kaufman.

“Imagination involves multiple facets,” Kaufman said, “but the same techniques for measuring it have essentially dominated the field for a century. We want to spur research on more innovative methods for better understanding this important human resource.”

“Many might think imagination can’t be measured,” said Christopher Stawski, vice president of strategic program initiatives at the John Templeton Foundation. “But by supporting this ambitious scientific research program we hope to better understand how to encourage and cultivate the imaginative capacities of individuals and society to increase human potential and flourishing.”

To capture the diverse qualities that underpin imagination, a new measurement system, an “Imagination Quotient,” is necessary. After establishing the grants competition last year with that goal in mind, Seligman, Kaufman and a board of scientific advisors selected the 16 top proposals.

The researchers funded through this program will take a wide array of approaches to find insights into how imagination is exercised and how it can be encouraged. Some will evaluate motivational approaches among students, others will conduct experiments with technological interventions, such as transcranial direct current stimulation, and still others will construct personalized virtual environments for individuals to explore. Multiple sensory modalities will be investigated, including imaginative auditory, linguistic and visuo-spatial abilities.

These diverse methodologies will converge on ways to measure, and ultimately improve, the capacity for imaginative and creative thought. Such imagination training could occur on a personal level, through a smartphone app or on an institutional one, through a high school enrichment program.

“What you measure matters,” Kaufman said. “We spend so much time on standardized testing and measuring the ability to learn what is, but we don’t track how much we’re developing people’s ability to imagine what could be. That has real implications for social and emotional well-being, as well as for peace and compassion. The ability to transport your mind into the mind of others draws on the same mental machinery that it takes to transport your own mind into the future.

“Now is the time to address this neglected set of skills,” he said. “The better our ability to assess those skills, the better we will be at cultivating them.”

The awardees, pending grant agreement finalization, are:

- Jennifer Drake from Brooklyn College of the City University of New York, Ellen Winner from Boston College, and Seymour Simmons from Winthrop University will receive \$175,000 to explore how we might assess and foster visual imagination through drawing. Visual imagination involves the ability to generate, manipulate and transform images mentally and requires going beyond the information given to the senses. Can we use drawing to develop visual imagination in individuals with no prior training or talent in drawing?
- Todd Thrash from The College of William & Mary and Joseph Weissgold from The Future Project will receive \$175,000 to study a motivational approach to the enhancement of imagination and human flourishing. Can illumination and inspiration be measured and developed? Their real-world intervention is The Future Project, a non-profit organization that works in public high schools in seven cities across the United States. The Future Project is dedicated to helping students turn their purpose and passions into “Future Projects” with the help of “Dream Directors” and coaches.
- Sophie Stumm from Goldsmiths University of London and Tomas Chamorro-Premuzi from University College, London, and Columbia University will receive \$194,040 to develop a new test battery to assess imagination (‘imQ’) and to explore the genetic architecture and nomological nexus of imagination. Based on this, they will test whether a smartphone application can help people to cultivate and grow their imagination.
- David Condon, Darya Zabelina and Todd Parish from Northwestern University will receive \$183,000 to measure four aspects of imagination: frequency of imaginings, complexity and detail of imagination, emotional valence (positive versus negative) and directedness (goal-directed versus “free-floating.”) They will then use their Imagination Quotient (ImQ) to evaluate the relationships between

imagination (and its sub-factors) and academic achievement, creative achievement, divergent thinking, vocational interests, intelligence and personality. Finally, they will look at the neural basis of attention in high and low imaginative people.

- Baptiste Barbot from Pace University and Frank Zenasni from Université Paris Descartes will receive \$198,695 to look at the measurement and development of narrative imagination (NI) which involves the ability to evoke the past, anticipate the future and combine these elements in a creative way. Through this project, Barbot and Zenasni will develop both a tablet-based measure of imagination and a training program for users immersed in virtual fantasy worlds and simulated reality experiences based on individual user needs.
- Diana Tamir from Princeton University, Adam Waytz from the Kellogg School of Management at Northwestern University and Hal Hershfield from UCLA's Anderson School of Management will receive \$200,000 for their project to explore imagination by studying imagination experts: artists, musicians and creatives with a proven ability to generate highly imaginative output. To do so, they will use neural, behavioral and linguistic measures of their subjects' capacity for simulation. What does it mean to excel at imagination, and are there specific skills that can be taught to individuals to help them to develop it?
- Andrew Newberg from Thomas Jefferson University and Hospital will receive \$100,000 to test how the brain works during different types of cognitive processes related to imagination, such as abductive, inductive and deductive reasoning. The goal of the study is to use magnetic resonance imaging to determine the anatomical correlates related to creative thinking in a group of imagination experts compared to normal controls. How are different parts of the brain active and connected to each other in highly imaginative people during different kinds of mental tasks?
- Ansley Gilpin and Jason DeCaro from the University of Alabama will receive \$199,940 to advance the measurement and improvement of fantasy orientation and imaginative play in children. They aim to answer two important questions to propel research in childhood imagination: How is children's imagination best defined and measured? and can imagination be stimulated to enhance children's development?
- Jonathan W. Schooler from the University of California, Santa Barbara, will receive \$199,781 to investigate how daydreaming, a form of imaginative thought in which people routinely engage, affects creativity, and in particular creative writing. While daydreaming fills a substantial portion of everyday life, and writers often report using their daydreams as a source of inspiration, very little is known about the kinds of daydreaming conducive to creativity. Can an intervention be developed that uses deliberate practice of daydreaming to increase creativity among students and aspiring writers?

- Joseph Renzulli and Ronald Beghetto from the University of Connecticut will receive \$175,000 to examine the importance of imagination, creativity and innovation (ICI), considered essential qualities for the cultural, social and economic growth of nations, as vital outcomes of schooling. The study will include the development of a series of validated instruments, a portfolio that documents a school's outcomes and a guidebook for schools to develop and extend their ICI resources.
- Paul Silvia and Roger Beaty from the University of North Carolina, Greensboro, will receive \$175,000 to study how the brain generates creative ideas. They will examine how two different brain networks, the default mode and executive control networks, influence creativity. Does creativity involve the cooperation of these brain networks?
- Kurt Gray, Michael Christian and John Patrick from the University of North Carolina, Chapel Hill, will receive \$198,769 to explore creativity and the quantification of free thought. They will quantify the imaginative creativity inherent in free thought using sophisticated semantic analysis measures. Can these metrics predict real-world creativity, allow simple creativity-improving interventions and be easily integrated into social media platforms to collect "big data"?
- Roy Hamilton, Dawn Mechanic-Hamilton and Sharon Thompson-Schill from the University of Pennsylvania and Evangelia Chrysikou from the University of Kansas will receive \$175,000 to better understand how transcranial direct current stimulation (tDCS) may enhance a person's creative uses for everyday objects. Drawing on their prior work, they will investigate whether quieting frontal lobe activity using this safe, noninvasive form of neuromodulation can have an enduring effect on the ability to imagine creative uses of common objects. They will also use state-of-the-art optical imaging techniques, including diffuse optical spectroscopy and diffuse correlational spectroscopy, to better understand the relationship between changes in imaginative thinking caused by tDCS and changes in frontal lobe activity.
- Mary-Helen Immordino-Yang and Daphna Oyserman from the University of Southern California will receive \$200,000 to work on developing and validating a measure of social-emotional imagination quotient (ImQ) for adolescents. This project will also involve a mixed-method neuroimaging and psychosocial longitudinal study with school-based interventions among youths from various race-ethnic and socio-economic backgrounds. Immordino-Yang and Oyserman argue that adolescents need social-emotional imagination to adaptively navigate their expanding social worlds and to build and enact identities and strategies that move them forward toward attaining their desired future selves.
- Psyche Loui from Wesleyan University will receive \$200,000 to study the structural and functional biomarkers of aesthetic creativity and imagination.

Collaborating with musicians, the study will follow a course on jazz improvisation and compare it against a randomized control group on a diverse set of behavioral tests, including jazz improvisation, auditory imagery, divergent thinking, IQ working memory and tests of brain electrical potential recordings and structural and functional brain MRI, before and after training. Through the project, the team will seek to understand the source, contexts and learning trajectories of aesthetic imagination and creativity.

- Zorana Ivcevic Pringle from Yale University, Paul Silvia from the University of North Carolina, Greensboro, and Magdalena Grohman from the University of Texas at Dallas will receive \$150,000 to develop ways to assess self-regulation in creativity and to explore how original ideas become creative products or performances. They believe that transformation from creative potential, an imagined idea, to product or performance requires self-regulation of demands on one's time and attention, regulation of behavior associated with emotions of frustration and disappointment and managing personal goals and expectations from others.