

Penn Positive Psychology Center Annual Report

May 30, 2020

Martin Seligman, Director

Peter Schulman, Executive Director

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This is a report on the activities of the Positive Psychology Center (PPC). The PPC was officially created November 7, 2003 and is thriving intellectually and financially. It is a leading center in the world for research, education, application and the dissemination of Positive Psychology. It is widely recognized in both the scholarly and public press. The PPC is financially self-sustaining and contributes substantial overhead to Penn.

The mission of the PPC is to promote empirical research, education, training, applications, and the dissemination of Positive Psychology. Positive Psychology is the scientific study of the strengths that enable individuals and communities to thrive. This field is founded on the belief that people want to lead meaningful and fulfilling lives, to cultivate what is best within themselves, and to enhance their experiences of love, work, and play.

SIGNIFICANT ACCOMPLISHMENTS

Pandemic Resources:

Positive Psychology Center (PPC) faculty and staff have provided wellness resources to help people navigate the challenges of the COVID-19 pandemic:

- **Free Online Resilience Course for Penn and the Public.** The PPC worked with LPS to arrange the release of Dr. Karen Reivich’s online Coursera Resilience Skills course at no charge for the public, for a limited time (at least a few months), starting April 6, 2020. This highly rated and popular course is also part of the five-course specialization called Foundations of Positive Psychology.
 - In just eight weeks since this free course was released, **14,643 people** have enrolled and the average rating is **4.9 out of 5.0** (431 ratings).
<https://www.coursera.org/learn/resilience-uncertainty>
<https://www.sas.upenn.edu/news/penn-lps-launches-resilience-coursera-course>
 - **Penn Medicine** featured this resilience course in its April 29, 2020 announcement from the Office of the CEO for its 40,000+ employees. Penn Medicine leadership were the original impetus for releasing the course at no charge. The PPC had been delivering a series of face-to-face Penn Resilience Programs for hundreds of Penn Medicine faculty and staff since 2018, with positive feedback. In March 2020, Lisa Bellini, MD (Vice Dean for Academic Affairs, Vice Chair, Education and Inpatient Medicine), asked Dr. Reivich for virtual resources to help the Penn Medicine community cope with the pandemic.
 - Several **Penn articles and newsletters** have featured this online resilience course, including the April 10, 2020 Penn SAS News, April 16 Penn Today, May 4 Daily Pennsylvanian, and May 6 Graduate Student Center Weekly Newsletter.
<https://www.thedp.com/article/2020/05/penn-psychology-resilience-coronavirus-coursera>
<https://penntoday.upenn.edu/news/six-tips-stay-calm-positive-and-resilient-trying-times>
- PPC faculty offered practical wellness advice for the **Penn community**:
 - In the spring of 2020, Dr. Seligman offered a four-session, virtual, live, interactive course on “Hope and Resilience” for 20 Penn undergraduates. The students rated the course as very educational and useful. The students had direct (virtual) contact with Dr. Seligman.
 - In the March 13, 2020 Penn Today, Dr. Martin Seligman presented a practical exercise for handling pandemic uncertainty.
<https://penntoday.upenn.edu/news/tips-to-help-stay-calm-amid-coronavirus-COVID19-uncertainty>

- In July 2020, Dr. Karen Reivich will deliver an interactive, virtual presentation for about 100 Penn senior administrative leadership for the speaker series sponsored by Penn Executive Vice President (Craig Carnaroli).
- In the April 16, 2020 Penn Today, Dr. James Pawelski and Dr. Karen Reivich offered practical tips to stay resilient in the pandemic.
<https://penntoday.upenn.edu/news/six-tips-stay-calm-positive-and-resilient-trying-times>
- For Penn’s Alumni Weekend (May 16, 2020), Dr. Angela Duckworth discussed grit and resilience in the time of COVID-19. The recorded video is available:
https://www.facebook.com/watch/live/?v=227753268524096&ref=watch_permalink
- Dr. Karen Reivich gave a virtual, interactive presentation to the Penn field hockey team on “Optimism in a Time of Uncertainty,” April 24, 2020.
- PPC faculty have been featured in **national media**, providing wellness advice for navigating the pandemic.
 - Dr. Karen Reivich was interviewed by the **New York Times** for a special series on cultivating resilience during the pandemic, released June 15, 2020.
<https://www.nytimes.com/2020/06/15/health/resilience-trauma-emdr-treatment.html?referringSource=articleShare>
 - Dr. Angela Duckworth was featured on the May 21, 2020 **CNN Global Town Hall: Coronavirus Facts and Fears**, hosted by Anderson Cooper and Dr. Sanjay Gupta.
<https://www.cnn.com/videos/health/2020/05/22/entire-may-21-coronavirus-town-hall-part-6-sot-vpx.cnn>
 - Drs. Angela Duckworth, Lyle Ungar, and Ezekiel Emanuel wrote an article for the **New York Times** that appeared May 27, 2020, “There are 3 Things We Have to Do to Get People Wearing Masks: Persuasion works better than compulsion.”
<https://www.nytimes.com/2020/05/27/opinion/coronavirus-masks.html>
 - Dr. James Pawelski is co-hosting with Larry King a “Coping with COVID” interview series with leading researchers and practitioners in the science of well-being, co-sponsored by the International Positive Psychology Association.
https://www.ippanetwork.org/2020/04/21/pvcwc/?fbclid=IwAR2IJ1d_YnTXwgoEmONqV3GuXABhRx958a5qHewnGytF4N6AWiUBAiY3zJA
 - Dr. James Pawelski had a conversation with Larry King for an online class about the need for people to connect to each other authentically during uncertain times.
<https://www.92y.org/class/art-of-positive-conversation.aspx>
 - The PPC’s big data World Well Being Project created a real-time COVID-19 wellness map. This map is a free, interactive tool that displays well-being in the U.S. by county, based on Census data and billions of tweets.

<https://penntoday.upenn.edu/news/language-tweets-offers-insight-community-level-well-being-COVID-map>
<https://map.wwbp.org/>

- **Virtual Penn Resilience Programs.** Due to travel and meeting restrictions, our revenue-generating Penn Resilience Program team has adapted quickly to delivering contracted programs and services virtually by video conference, instead of the usual in-person format. We have and will continue to modify our instructional design, curricula, and program delivery for a virtual environment. Since the pandemic, we have delivered services virtually for several clients, including the Oklahoma City Thunder, the Oklahoma City public high schools (Thunder-sponsored), and Genentech (train-the-trainer program).

New Grants:

We received four new grants:

- **The Primals Project: Seeding Catalytic Investigations in Psychology, February 2021 to July 2024, Templeton Religion Trust (PI Seligman, Co-PI Clifton).**

Primal world beliefs, also called primals, concern the general character of the world as a whole, e.g., the world is dangerous, the world is beautiful, etc. Clifton and colleagues (2019) recently introduced this largely overlooked category of beliefs in a foundational paper and identified several areas for further research, which this grant is exploring. Primals are thought to influence numerous psychological outcomes, such as life satisfaction, depression, trust, gratitude, optimism, and political ideology.

- **Penn Resilience Program for Law Enforcement Personnel, January 2020 to March 2022 (PI Seligman), Subcontract from International Association of Chiefs of Police (IACP), under prime award from the U.S. Department of Justice.**

The goal of this DOJ initiative is to enable law U.S. law enforcement to cope effectively with adversity and stress, build stronger community relations, and lead safe and fulfilling lives personally and professionally. This is the continuation of work started in 2018. In the first grant, we customized and delivered resilience training for law enforcement in three pilot sites, including a train-the-trainer program to teach law enforcement how to deliver the program to other law enforcement. The goal of this second grant is a scalable and sustainable dissemination of the resilience skills more broadly to law enforcement around the country.

- **The Arts and the Science of Well-Being: A Multi-Disciplinary Collaboration for Understanding, Assessing, and Cultivating Human Flourishing, August 2020 to June 2022, National Endowment for the Arts: Includes designation as an NEA Research Lab (PI Pawelski).**

The purpose is to advance the understanding, assessment, and cultivation of well-being by catalyzing a transformative movement in the humanities and a sustained strategic

collaboration between them and the social sciences. Activities include retreats with subject matter experts, assessment development, empirical research, a book series, a website for dissemination, and a capstone conference.

- **Access, Use, and Customization of AWARE Research Platform for a COVID-19 Study, May 2020 to May 2021, National Institute on Drug Abuse (NIH), (PI Ungar).**

The PPC's World Well-Being Project is supporting researchers at the National Institute on Drug Abuse to collect and analyze phone sensor and survey data from hundreds or even thousands of participants. Physical distancing and sheltering-in-place are creating challenges for people with substance use disorders, especially those in treatment for opioid use disorder. Our goal is to better understand these challenges, particularly for minority populations, which are disproportionately affected by COVID-19.

New Course:

- In the spring of 2020, Dr. Angela Duckworth offered a new course for undergraduates, called "Grit Lab: Fostering Passion and Perseverance," for a maximum of 64 students. <https://www.thedp.com/article/2019/10/angela-duckworth-upenn-psychology-grit-character-labs>

The aim of Grit Lab was three-fold: (1) to help students identify their next step in life, (2) equip them with generalizable knowledge about the science of passion and perseverance, and (3) help other young people learn via written and video documentation of the students' journey. At the heart of this course were cutting-edge scientific discoveries about how to foster passion and perseverance for long-term goals.

Book Releases:

- In two books, *Positive Psychotherapy: A Clinician Manual*, and *Positive Psychotherapy: Workbook*, Drs. Rashid and Seligman provide therapists with a session-by-session therapeutic approach based on the science and practices of Positive Psychology that enable individuals, communities, and institutions to flourish. These two books have already been translated into six languages.
- In *The Hope Circuit*, Dr. Seligman looks at the development of Positive Psychology, the history of his own life, and history of 20th century psychology.
- In *Happy Together*, Dr. James Pawelski and Suzann Pileggi Pawelski apply the principles of Positive Psychology to enable thriving romantic relationships based on scientific research.

Online Certificate through LPS: Applied Positive Psychology (APOP):

The [Applied Positive Psychology \(APOP\) certificate](#) launched in January 2019 with support from the Positive Psychology Center, as a part of Penn's College of Liberal and Professional Studies (LPS) online Bachelor of Applied Arts and Sciences ([BAAS](#)). This online, accredited degree offers a variety of degree concentrations and certificate

“clusters” that are designed to meet the needs of working adults and non-traditional students who wish to pursue a liberal arts education with career enhancement in mind.

The APOP four-course certificate launched with its first two courses in Spring 2019 and added its second two courses in Fall 2019. To date, ten classes have been offered – 2 in Spring 2019, 4 in Fall 2019, and 4 in Spring 2020. The APOP certificate exceeded application and enrollment expectations with total enrollments of 334 course completions. Currently, there are 35 intent-to-enrolls for the APOP certificate for summer and fall 2020.

APOP develops tools and practices to enhance human flourishing. Students are introduced to the field of Positive Psychology and learn practical strategies that support personal, organizational, and community well-being. The courses teach the theoretical and empirical foundations of human flourishing, how well-being is measured, and what activities increase human flourishing in various contexts and settings.

The certificate will offer an “expanded certificate” option later this year with the addition of two courses: one on positive relationships, scheduled to launch in Fall (2) 2020, and one on moral psychology, scheduled to launch in Spring (1) 2021.

Online Certificate on Coursera: Foundations of Positive Psychology:

The Positive Psychology Center and the College of Liberal and Professional Studies produced a five-course online specialization on the Coursera platform called Foundations of Positive Psychology, which launched March 2017. Students learn about the theories, research, and applications of Positive Psychology.

The five courses are taught by Positive Psychology Center personnel, including:

- **Positive Psychology: Martin Seligman’s Visionary Science**, taught by Dr. Seligman.
 - Total Learners as of May 25, 2020: 50,544.
 - Student rating = 4.8 out of 5.0 (3,196 ratings).
- **Positive Psychology: Resilience Skills**, taught by Dr. Karen Reivich.
 - Total Learners as of May 25, 2020: 39,815.
 - Student rating = 4.9 out of 5.0 (1,277 ratings).
- **Positive Psychology: Applications and Interventions**, taught by Dr. James Pawelski.
 - Total Learners as of May 25, 2020: 22,629.
 - Student rating = 4.8 out of 5.0 (1,316 ratings).
- **Positive Psychology: Character, Grit, and Research Methods**, taught by Dr. Angela Duckworth.
 - Total Learners as of May 25, 2020: 13,813.
 - Student rating = 4.3 out of 5.0 (758 ratings).
- **Positive Psychology Specialization Project: Design Your Life for Well-Being**, taught by Dr. Martin Seligman.
 - Total Learners as of May 25, 2020: 11,991.
 - Student rating = 4.7 out of 5.0 (488 ratings).

Dr. Reivich's Resilience Skills course has also been made available to Penn groups, including:

- **Penn Alumni Relations** offered Dr. Reivich's Resilience Skills course to all Penn alumni in the winter of 2018/19 through their Penn Alumni Education program. Within two hours of registration opening, 750 alumni enrolled. This was the fastest sell-out for an alumni course in Penn history. Ultimately, 857 alumni registered, representing 37 U.S. states and 20 countries. Of the 857 alumni who registered, 746 established accounts to access course content. 303 (41%) of those with an established account completed the course, which was the highest completion rate in Penn Alumni Education's five-year course history. In a survey of course participants, 94% reported completing the course and 96% rated both the overall course quality and Dr. Reivich's quality of instruction as "very good" or "excellent".
- Thirty-five **Penn Weekly Paid Professional Staff** took this online course for free in the fall/winter 2018/19 and also attended a lunch meeting with Dr. Reivich to discuss their experience. See the Penn News article: <https://penntoday.upenn.edu/news/weekly-paid-professional-staff-learn-resilience-through-free-online-opportunity/>

Awards:

- The PPC Education Team (PPCEd) received the 2019 SAS Staff Recognition Team Award. This team includes Aaron Boczkowski, Leona Brandwene, Nicole Stottlemeyer, and Laura Taylor.
<https://www.sas.upenn.edu/sashr/content/sections/incentive-bonus/2019-sas-staff-recognition-award-recipients>
- Penn President Amy Gutmann, Wharton Dean Geoffrey Garrett, and Penn Arts & Sciences Dean Steven J. Fluharty announced the establishment of the Rosa Lee and Egbert Chang Professorship at the University of Pennsylvania, generously funded by Nancy Yang, W'92 in honor of her parents. Professor Angela Duckworth is the inaugural recipient, effective July 2020.
https://powerofpenn.upenn.edu/the-power-of-resiliency/?utm_source=kfg&utm_medium=email&utm_campaign=issue_17
- Dr. Angela Duckworth was a recipient of the 2019 College of Liberal and Professional Studies Award for Distinguished Teaching in Professional Graduate Programs.
<https://www.sas.upenn.edu/lps/students/current/graduation/faculty-awards-2019>

Resilience Training Contracts:

- **Resilience Training Contracts.** Since 2007, we have delivered about 300 Penn Resilience Programs to more than 60,000 people. Many of these programs are train-the-trainer programs in which we train people how to teach resilience skills to others, using a structured curriculum. Attendees of these programs have gone on to teach these skills to more than a million people around the world. These train-the-trainer programs are an effective model for large-scale and sustainable teaching of the resilience skills.

- **Penn Resilience Program for Law Enforcement Personnel.** In May 2020, under a U.S. Department of Justice grant, the International Association of Chiefs of Police (IACP) issued a second grant to the Penn PPC for an additional 2.25 years. The goal of this second grant is a scalable and sustainable dissemination of the resilience skills more broadly to U.S. law enforcement around the country.

In 2018, the Penn PPC received the first two-year grant to customize and deliver resilience training for law enforcement in three U.S. pilot sites, including a train-the-trainer program to teach law enforcement how to deliver the program to other law enforcement. The goal of this initiative is to enable them to cope effectively with adversity and stress, build stronger community relations, and lead safe and fulfilling lives personally and professionally.

- **Penn Resilience Program for Health Care.** In FY20, we continued to work with health care clients, to address the growing concerns around burnout and other mental health issues facing physicians and other health care professionals. We have or will soon deliver resilience programs for:
 - Penn School of Medicine: Faculty and Physicians
 - Royal College of Surgeons in Ireland: Leadership
 - University of Michigan Medical School: Leadership Development Team
 - Yale School of Medicine: Physicians
 - Sentara Healthcare: Executives
 - Children’s Hospital of Philadelphia Foundation: Leadership and Staff
- **New and Ongoing Resilience Training Clients.** We continue to develop new clients and service existing clients, including:
 - Corporate-sponsored community outreach:
 - Penn Resilience Programs for hemophilia patients and their caregivers, sponsored by Genentech
 - Penn Resilience Programs for Oklahoma City public school high school students, sponsored by the Oklahoma City Thunder
 - Corporations:
 - Oklahoma City Thunder (NBA team)
 - BAE (British Aerospace)
 - Alcon Vision
 - Investors Group
 - Delta Galil
 - Wharton Executive Education
 - Education:
 - Western Governors University
 - Oklahoma State University
 - UK public schools
 - Law enforcement / Government:
 - U.S. Department of Justice
 - International Association of Chiefs of Police
 - Pennsylvania State Police
 - World Bank

- Wharton Executive Education programs:
 - Securities Industry Institute
 - Client Psychology for Certified Financial Planners
 - Client Psychology Program for Citi Global Sales Managers
 - Client Psychology Program for Merrill Lynch Financial Advisors
 - Athlete Development Professional Certification Program
- **Resilience Programs for Penn Employees.** We are delighted to bring our programs to the Penn community. These programs have had a positive response and word-of-mouth has increased demand within Penn. We have been or will be delivering programs to:
 - Penn Executive Vice President (Craig Carnaroli): For senior administrative leadership speaker series (July 2020).
 - Penn Division of Public Safety (Maureen Rush): For police officers and staff.
 - Penn Business Services Division (Marie Witt): For leadership team and their staff.
 - Penn Division of Human Resources (Jack Heuer): For staff.
 - Penn Wharton MBA Staff (Paula Greenberg): For staff.
 - Penn Division of Finance (Paul Richards): For staff.
 - Penn Wharton Computing (Scott McNulty): For Leadership and staff.
 - Penn Office of Audit, Compliance, and Privacy (Greg Pellicano). For staff.
 - Penn School of Social Policy and Practice (Regine Metellus): For staff.
 - Penn School of Medicine (Lisa Bellini, Deborah Driscoll). For faculty and physicians.
 - Penn Professional and Liberal Education (Nora Lewis): For staff.
 - Penn Athletics (Rudy Fuller): For coaches.
 - Penn Athletics (Rudy Fuller): Two-semester course for student athletes.
 - Penn Rodin College House (Kathryn McDonald): For undergraduate students.
 - [Online resilience course through PLE for Penn staff \(click here for press coverage\).](#)
- See more resilience programs under **Training Contracts** below.

Outreach Programs:

- **Popular Websites.** The PPC has two popular websites to educate people around the world about the Positive Psychology Center and the field of Positive Psychology. Both websites have been visited by millions of people around the world:
 - Positive Psychology Center Website: <https://ppc.sas.upenn.edu>
 - Authentic Happiness Website: <https://www.authentic happiness.sas.upenn.edu/>
- Presentations and Press for Penn Community:
 - [Penn Professor James Pawelski gave a presentation for the Penn Community Conversation series on September 18, 2019, titled: Coming Together to Share a Story: Finding Strength in Vulnerability.](#)
 - [Penn Professor Angela Duckworth Gives Advice on College Life and Career Choices in the September 16, 2019 Daily Pennsylvanian.](#)

- **United Nations Global Happiness Council.** Dr. Seligman was appointed the Education Chair of the Global Happiness Council (GHC), under the United Nation’s Sustainable Development Solutions Network (SDSN). GHC is a global network of leading academic specialists in happiness and key practitioners in areas ranging from psychology, economics, urban planning, civil society, business and government. The GHC identifies best practices at the national and local levels to encourage advancement of the causes of happiness and well-being.

Council members oversee the work of six thematic groups (education, workplace, personal happiness, public health, city design and management) who each produce a chapter of policy recommendations in the Global Happiness Policy Report, published annually and presented at the World Government Summit (WGS) in support of the Global Dialogue for Happiness. This report provides evidence and policy advice to participating governments on best practices to promote happiness and well-being. The work of the Council complements the World Happiness Reports and other research on the measurement and explanation of happiness. The aim of the GHC is to survey and share best practice policies drawn from the research literature and government experiences around the globe.

- **The International Positive Psychology Network (IPPA).** Dr. Martin Seligman played the lead role in creating IPPA, with contributions from Dr. James Pawelski. IPPA’s three-part mission is to promote the science and practice of Positive Psychology to enable individuals and institutions to thrive; to facilitate collaboration among researchers, teachers, students, and practitioners of positive psychology around the world and across academic disciplines; and to share the findings of positive psychology with a broad audience. IPPA hosted the Sixth World Congress on Positive Psychology in June 2019 in Melbourne, Australia and there were more than 1,200 registrants. The Positive Psychology Center staffed a booth at that conference to promote Penn’s Online Applied Positive Psychology Certificate program (APOP), Penn’s Master of Applied Positive Psychology program (MAPP) and the online Foundations of Positive Psychology Coursera Certificate. Speakers from the PPC included Dr. Martin Seligman, Dr. James Pawelski, among others. IPPA will host the Seventh World Congress on Positive Psychology in July 2021 in Vancouver, Canada. IPPA has thousands of members. <http://www.ippanetwork.org/>
- **The International Positive Education Network (IPEN).** IPEN was created by Dr. Martin Seligman and Lord James O’Shaughnessy to bring together teachers, parents, academics, students, schools, colleges, universities, charities, companies and governments to promote a new approach to education: academics + character + well-being. The goals are to support collaboration, change education practice and reform government policy. IPEN hosted the Second World Positive Education Conference in June 2018 in Fort Worth, Texas and there were more than 600 registrants. The Positive Psychology Center staffed a booth at this conference to promote the MAPP program and the online Foundations of Positive Psychology Coursera Certificate. Speakers from the PPC included Dr. Martin Seligman, Dr. James Pawelski, and Dr. Angela Duckworth. IPEN has thousands of members. <http://ipen-festival.com/>

Positive Education Summit:

Thanks to the generous donation of an anonymous donor, the Positive Psychology Center sponsored the Positive Education Summit June 7 to 9, 2019 at the Westin Hotel in Philadelphia. The purpose of the Summit was twofold – celebrate the accomplishments of past Positive Education initiatives and plan the future of Positive Education science and practice. About 35 distinguished leaders attended, including educators from around the world who have pioneered the application of Positive Education in schools, as well as Eisenhower Fellows <https://www.efworld.org/>

The goal of Positive Education is to increase well-being as well as advance the traditional goals of schooling (literacy, numeracy, and science). There are at least a few reasons to teach Positive Education in schools: (1) To increase well-being and optimism, (2) to prevent mental health problems such as depression and anxiety, and (3) to facilitate learning, creativity, and academic achievement. There is growing evidence from controlled studies that skills can be taught to children and adolescents through relatively brief school-based courses that significantly increase well-being, optimism, resilience, and academic performance, and prevent and reduce depression and anxiety.

PPC PERSONNEL

Martin Seligman, Ph.D., Director of PPC and Zellerbach Family Professor of Psychology
Peter Schulman, Executive Director
Angela Duckworth, Ph.D., Christopher H. Browne Distinguished Professor of Psychology
Allyson Mackey, Ph.D., Assistant Professor of Psychology
Paul Rozin, Ph.D., Professor of Psychology
James Pawelski, Ph.D., Professor of Practice, Director of Education
Karen Reivich, Ph.D., Director of Training Programs
John Hollway, J.D., Associate Dean and Executive Director of the Quattrone Center for the Fair Administration of Justice, Penn Law School
Howard Blumenthal, Senior Scholar, <http://www.hblumenthal.com>
Michael Baime, MD, Clinical Associate Professor of Medicine, Penn School of Medicine

Master of Applied Positive Psychology Program (MAPP):

James Pawelski, Ph.D., Director of Education and Senior Scholar
Leona Brandwene, Associate Director
Aaron Boczkowski, Program Coordinator
Laura Taylor, Program Assistant Coordinator
Nicole Stottlemeyer, Assistant Coordinator, Positive Education Programs

Humanities and Human Flourishing Project:

James Pawelski, Ph.D., Principal Investigator
Sarah Sidoti, Project Manager
Yerin Shim, Ph.D., Postdoctoral Fellow
Damien Crone, Ph.D., Postdoctoral Fellow
Michaela Ward, Research Manager

Resilience and Positive Psychology Training Programs:

Karen Reivich, Ph.D., Director of Training Programs

Peter Schulman, New Business Development, Customer Service, Operations Oversight
Judy Saltzberg, Ph.D., Instructor and Curriculum Developer
Jennifer Knapp, Senior Project Manager
Brittney Schlechter, Curriculum Development Manager
Catherine Thompson, Project Manager
Anand Petigara, Project Manager
Laura Vriend, Assistant Project Coordinator

Positive Soldier Health Grant:

Loryana Vie, Ph.D., Program Director
Andrew Allen, Statistical Analyst
Whitney Kelley, Statistical Analyst
Emily Stewart, Statistical Analyst

World Well Being Research Grant:

Lyle Ungar, Project Director
Anneke Buffone, Lead Research Scientist / Postdoctoral Research Fellow
Johannes Eichstaedt, Postdoctoral Fellow
Salvatore Giorgi, Research Programmer
Garrick Sherman, Data Scientist

Graduate Students with Dr. Seligman:

Jeremy Clifton (Ben Franklin Fellowship)
Max Genecov
David Yaden (Ben Franklin Fellowship)

Dr. Allyson Mackey's Research: Brain Plasticity and Development:

Austin Boroshok, Graduate Student
Lourdes Delgado Reyes, Postdoctoral Fellow
Yoojin Hahn, Research Coordinator
Julia Leonard, Postdoctoral Fellow
Cassidy McDermott, Graduate Student
Anne Park, Graduate Student
Sophie Sharp, Research Coordinator
Ursula Tooley, Graduate Student

Dr. Angela Duckworth's Research: Grit, Self-Control, and Character Development:

Sean Talamas, Executive Director
Paolo Terni, Director, Senior Research Support
Emma Satlof-Bedrick, Director, Research Partnerships
Chayce Baldwin, Research Coordinator

Information Technology Support Staff:

Tammer Ibrahim, IT Systems Administrator
Ani Leonhart, IT Systems Support Specialist

Undergraduate Student Assistants: Numerous Penn student research assistants help with various projects.

PPC ADVISORY BOARD

The advisory board for PPC and the MAPP program includes:

David Brainard

Associate Dean for the Natural Sciences, SAS
Director, Vision Research Center
RRL Professor of Psychology

Nora Lewis

Vice Dean, Professional and Liberal Education

Susan Meyer

Professor of Philosophy

Michael Platt

Professor of Neuroscience, James S. Riepe University Professor
Professor of Neuroscience, Professor of Psychology, Professor of Marketing

Lyle Ungar

Professor of Computer and Information Science

PPC ADVISORS

Following are some of the leading scholars who have worked with Dr. Seligman in charting the course of Positive Psychology:

- Mihalyi Csikszentmihalyi, Claremont Graduate University
- Edward Diener, Psychology, University of Illinois
- Kathleen Hall Jamieson, University of Pennsylvania Annenberg School of Communication
- George Vaillant, Psychiatry, Harvard University
- Darwin Labarthe, Centers for Disease Control and Prevention
- Roy Baumeister, Florida State University
- Peter Railton, University of Michigan
- Chandra Sripada, University of Michigan

RESEARCH SUMMARIES

Following are descriptions of the current and recent research projects at the Positive Psychology Center:

The Primals Project: Seeding Catalytic Investigations in Psychology. Dr. Seligman (PI) and Jeremy Clifton (co-PI) received 3.5-year grant from the Templeton Religion Trust from February 2021 to July 2024. Primal world beliefs, also called primals, concern the general character of the world as a whole, e.g., the world is dangerous and the world is beautiful. Clifton and colleagues (2019) recently introduced this largely overlooked category of beliefs in a foundational paper and identified several areas for further research, which this grant is exploring. Primals are thought to influence numerous psychological outcomes, such as life satisfaction, depression, trust, gratitude, optimism, and political ideology.

The Humanities and Human Flourishing: A Multi-Disciplinary Collaboration for Understanding, Assessing and Cultivating Well-Being. Dr. Pawelski (PI) received a research grant from the Templeton Religion Trust for a 4-year grant from July 2017 to June 2021. The purpose is to advance the understanding, assessment, and cultivation of well-being by catalyzing a transformative movement in the humanities and a sustained strategic collaboration between them and the social sciences. Activities include retreats with subject matter experts, assessment development, empirical research, a book series, a website for dissemination, and a capstone conference.

Positive Education in the Philippines: Educating for Academic Success and for Well-Being (Quezon City Academy, PI-Dr. Alejandro Adler). We received a two-year research grant to introduce Positive Education in the Philippines starting with 20 pilot schools. The grant covers baseline measurement in the domains of well-being, academic performance, and health outcomes. It also covers training of teachers, principals, and trainers in the skills to teach and practice Positive Education. Finally, it also covers post-intervention measurement after the end of the program.

Positive Education at The Shipley School (The Shipley School, PI-Dr. Alejandro Adler). We received a two-year research grant to revamp the existing Social Emotional and Ethical Development (SEED) program at The Shipley School using the best empirically grounded measurement tools and interventions, mostly from the field of Positive Psychology. The grant covers baseline measurement in the domains of well-being, academic performance, and health outcomes. We used the data to co-design a new Positive Education program to be implemented across all constituencies and academic subjects within the The Shipley School. We have conducted a post-implementation measurement nine months after introducing the new program at The Shipley School and an impact evaluation.

Well-Being Research and Practice at The Shawnee Institute: A Research Case Study of Organizational Transformation (The Shawnee Institute, PI-Dr. Alejandro Adler). We received a two-year research grant to conduct multi-level within and between subjects measurement and impact evaluations at The Shawnee Institute to identify enabling moderators, mediators, and mechanisms in their efforts to transform the existing tourist destination into an institute in which research and practice on a different number of subjects is conducted, including well-being.

Promoting Resilience in Post-Conflict Colombian Youth (International Organization for Migration [IOM], PI-Dr. Alejandro Adler). We received a two-year research grant to use the best existing measurement tools from Positive Psychology to measure existing IOM well-being and resilience promotion programs, and using the data, help them redesign their programs to maximize the positive impact they have on post-conflict youth in the country.

Teaching Well-being Improves Academic Performance in Bhutan (Bhutanese Ministry of Education, PI-Dr. Martin Seligman). As part of his doctoral research, Dr. Alejandro Adler conducted a large-scale randomized controlled trial (RCT) in 18 secondary schools (grades 7-12) with a total of 8,385 students in Bhutan. The schools were randomly assigned to an intervention group or a control group. The intervention schools received a positive education program targeting ten non-academic well-being skills. Students in the intervention schools reported

significantly higher well-being and they performed significantly better on standardized national exams at the end of the 15-month intervention, and 12 months after the intervention ended.

Teaching Well-being Improves Academic Performance in Mexico (Jalisco Ministry of Education, PI-Dr. Martin Seligman). As part of his doctoral research, Dr. Alejandro Adler conducted a large-scale randomized controlled trial (RCT) in 70 secondary schools (grades 10-12) with a total of 68,762 students. The schools were randomly assigned to an intervention group or a control group. The intervention schools received a positive education intervention targeting ten non-academic well-being skills. Students in the intervention schools reported significantly higher well-being and they performed significantly better on standardized national exams at the end of the 15-month intervention.

Teaching Well-being Increases Academic Performance in Peru (Peruvian Ministry of Education and World Bank, PI-Dr. Martin Seligman). As part of his doctoral research, Dr. Alejandro Adler conducted a large-scale randomized controlled trial (RCT) in 694 secondary schools (grades 7-12) with a total of 694,153 students. The schools were randomly assigned to an intervention group or a control group. The intervention schools received a positive education intervention targeting ten non-academic well-being skills. Students in the intervention schools reported significantly higher well-being and they performed significantly better on standardized national exams at the end of the 15-month intervention.

World Well Being Project (WWBP): Measuring well-being using big data, social media, and language analyses (Templeton Religion Trust, PI-Dr. Martin Seligman). The World Well-Being Project has performed multidisciplinary research at the intersection of psychology, computer science, medicine, and public health. WWBP has developed unobtrusive measurements of the psychological and physical well-being of large populations using written expressions in social media, such as Facebook and Twitter. Using a combination of social media language, traditional survey methods, and existing datasets, WWBP has successfully built predictive language models across a wide range of constructs including (but not limited to) personality (Big Five personality, and the dark triad – narcissism, psychopathy, and Machiavellianism), subjective well-being, income, temporal orientation, religiosity, mental illness, valence and arousal, and partisan bias in new sources. WWBP also uses these techniques to explore how people communicate and perceive one another. For example, in an article in press at *Social Psychological and Personality Science*, we analyzed the accuracy of people's perceptions of others based on textual cues and identified the stereotypes people use to categorize others across age, gender, education, and political orientation.

WWBP has successfully used big data to predict physical health outcomes on the individual and county level. In a high-profile article published in *Psychological Science* in 2015, we used language expressed on Twitter to characterize community-level psychological correlates of age-adjusted mortality from atherosclerotic heart disease (AHD). Language patterns reflecting negative social relationships, disengagement, and negative emotions – especially anger – emerged as risk factors; positive emotions and psychological engagement emerged as protective factors. Most correlations remained significant after controlling for income and education. A cross-sectional regression model based only on Twitter language predicted AHD mortality significantly better than did a model that combined 10 common demographic, socioeconomic, and health risk factors, including smoking and hypertension. We have also demonstrated that counties with higher use of the future tense as well as higher use of action words (e.g. work,

plan) have a lower prevalence of HIV. Finally, in a recent Health Affairs article, we compared the content of Yelp narrative reviews of hospitals to the topics in the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey – the US standard for evaluating patients’ experiences after hospitalization. Yelp reviews covered an additional twelve domains not found in HCAHPS. These domains most strongly correlated with positive or negative reviews on Yelp, suggesting that Yelp can help policy makers identify the measures of hospital quality that matter most to patients and caregivers.

Finally, WWBP is a pioneer of natural language processing methods and has published in many prominent computer science and computational linguistics outlets in order to disseminate our techniques. For example, we have introduced a method to identify frequent contexts in which a word switches polarity and to reveal which words appear in both positive and negative contexts. We have also explored how stylistic and syntactic variations in writing style relate to authors’ age and income, and we investigated how well our well-being lexicon from Twitter language translated to Spanish.

These are just a few of the findings from WWBP research. For more details, see the descriptions in the **References** section below.

Measuring the Well-being of the Spanish Population. (Bioiberica, PI-Dr. Martin Seligman).

We have produced and validated a model that estimates the regional variation in well-being within Spain (at the level of provinces) from Tweets in Spanish. This included developing a Spanish PERMA (Positive Emotion, Engagement, Positive Relationships, Meaning, Accomplishment) lexicon and developing a Well-Being Map. The results are displayed on the Map, which allows the general population to view variations between regions. Penn retained the rights to use this lexicon for other studies.

Advancing the Science of Imagination: Toward an “Imagination Quotient” (Templeton Foundation/Imagination Institute, PI-Dr. Martin Seligman). The purpose of this project is to advance the measurement, research, and development of imagination across all sectors of society. This grant is comprised of two main components: (1) An award program to fund researchers interested in the measurement and enhancement of imagination and (2) a series of research retreats during which creative leaders in various fields are invited to exchange and discuss ideas about the nature and enhancement of imaginative abilities. The objective of this component is to generate innovative research questions and to investigate imagination from a domain-specific perspective.

On the Awards: We have funded sixteen imagination-oriented projects in order to stimulate interest and rigorous research in this area. The titles of these projects reflect the diversity of attempts to better understand and cultivate imagination: Assessing & Fostering Visual Imagination through Drawing, A Motivational Approach to the Enhancement of Imagination & Human Flourishing, Introducing imQ: Assessing & Improving Imagination, The Four Factor Imagination Theory (4FIT): Strategy, Methodology, & Anticipated Results, Measurement & Development of Narrative Imagination (NI), Identifying the Role of Simulation in Imagination Expertise, The Neurological Correlates of Creativity in Geniuses, Fantasy Orientation: Measuring Individual Differences, Improving Imaginative Play, & Assessing Mechanisms of Cognitive Development, The Benefits of Daydreaming for Creativity & Creative Writing, The School Imagination, Creativity, & Innovation (ICI) Index & Portfolio, Measuring Imagination

with Functional Network Connectivity, Creativity & the Quantification of Free Thought, Transcranial Direct Current Stimulation to Enhance Creative Uses for Objects, Measuring & Improving Adolescents' Social-Emotional Imagination to Foster Flourishing: A Mixed-Method Neuroimaging & Psychosocial Longitudinal Study with School-Based Interventions, Structural & Functional Biomarkers of Aesthetic Creativity & Imagination, Self-Regulation in Creativity: The Difference Between Having an idea & Doing Something With It. In June 2017, we gathered all of our grant awardees for a symposium in Philadelphia where they presented their findings and publications to our team and the sponsor of this research.

On the Research Retreats: We gathered dozens of notable creative figures – psychologists, educators, futurists, physicists, comedians, neuroscientists, music composers, engineers, leadership, polymaths, and spiritual leaders to attend the retreats to discuss the role of imagination in their respective fields. For each event, we prepare a report and video footage highlights for general consumption on our website, <http://imagination-institute.org/>.

Prospective Psychology Stage 1: Imagination and Being Drawn into the Future and Prospective Psychology Stage 2: A Research Competition (Templeton Foundation, PI-Dr. Martin Seligman). These are two inter-linked new grants for the field of Prospective Psychology. These two 3-year grants explored how people are drawn to the future as opposed to driven by the past. We conducted foundational research on prospective thought, defined as mental and emotional representations of possible future events, held conferences of leading scholars and awarded research grants through a competitive RFP process.

Positive Soldier Health (Robert Wood Johnson Foundation: PI-Dr. Martin Seligman). This 7-year project supports a collaboration between the University of Pennsylvania and the U.S. Army to explore, on a large scale, the influence of psychological and physical health assets on illness, health care utilization and health care expenditure. This project is enabled by an Army initiative that is integrating 40 different datasets, combining data on the health, illness, health care utilization and psychological fitness of all active-duty personnel – currently more than a million soldiers. The project created the infrastructure for a civilian-military collaboration that enabled researchers outside the military to analyze the dataset and to explore issues related to traditional health-risk factors. Deliverables included 40 proof-of-concept cross-sectional analyses for the relationship of key health assets and health-risk factors to key utilization variables; 40 proof-of-concept longitudinal analyses for the relationship of health assets and health-risk factors as predictors of illness and utilization; establishment of a civilian-military steering committee to oversee the analyses and develop protocols, processes and resources to enable external researchers to use the database; initiation of at least five external research projects in each of Project Years 3 and 4; and a plan for sustainability.

Positive Health (Robert Wood Johnson Foundation: PI-Dr. Martin Seligman). This 8-year project lays the groundwork for a new approach to improving physical health that focuses on "health strengths," instead of the traditional emphasis on diagnosis, treatment and prevention of disease. The premise is that health strengths are a buffer against physical and mental illness and, more importantly, that low-cost interventions can be designed to increase a person's health strengths. Such interventions could provide some low-cost options that improve health and reduce costs. The deliverables include (1) a formalized concept of Positive Health, (2) identification of variables that appear to be strong predictors of Positive Health, (3) a review of the relevant longitudinal studies that could be re-analyzed for Positive Health, (4) identification

of interventions that could help people improve performance on those predictors, and (5) ideas for further development of the field.

Universal Assessment Research: Is the world good and does it matter? (Templeton Religion Trust, PI-Dr. Martin Seligman). We explored how overall judgments of the world, termed “universal assessments” (UAs), affect human behavior and life outcomes. Key questions include: Which UA profiles are most conducive to wellbeing? Can interventions be administered? The goal of this project is to identify innovative, efficacious, and scalable interventions which can be used to improve the human condition. In decades ahead, businesses, teachers, therapists, religious leaders, governments, and others may adopt practices promoting certain UAs. Parents may make conscious choices about which UAs they wish to pass on to children. Individuals will be able to take questionnaires to assess their UA profile, learn how it might be optimized, and discover how others’ UAs influence them through the social network.

The Humanities and the Science of Well-Being: Toward a Strategic Collaboration for Understanding, Measuring, and Cultivating Human Flourishing (Templeton Religion Trust, PI-Pawelski). The purpose of this project is research to define, measure, and cultivate well-being in the humanities. There are three main activities: (1) research on the nature of the contemporary “positive turn” toward well-being and on the contributions the humanities might make in this endeavor, (2) the identification of leading scholars in the humanities, who believe in the importance of a strategic collaboration between these two domains for the study of well-being, and (3) the development of a large, multi-year, interdisciplinary grant proposal to launch such a strategic collaboration. Outputs include three peer-reviewed articles, a major entry in a standard reference work, six public lectures, a graduate course, a detailed listing of interested scholars in various disciplines, a planning meeting with some dozen key thought leaders, and a major grant proposal.

Self-Transcendent Experiences Research (David Yaden’s Doctoral Research). Self-transcendent experiences are closely related to the religious, spiritual, and mystical experiences first described in William James’s classic *The Varieties of Religious Experience*. While such experiences have often been assumed pathological, David’s research provides evidence that they are prevalent in contemporary society and often have profoundly positive results for both believers and non-believers alike. His research aims to inform diagnostic categories in the DSM and to establish an epidemiology of self-transcendent experiences, including common triggers and outcomes, as well as their underlying neurobiological and cognitive mechanisms. Several articles that review empirical research on this topic and scales meant to measure these experiences have now been published. Brain stimulation and virtual reality studies have been completed and the data is being analyzed. David is now exploring further subjective features of these experiences, their intrinsic worth to those who have them, and their potential instrumental value in therapeutic contexts such as addiction. David continues to work on a book contracted by Oxford University Press on this topic.

Primal World Beliefs (Jeremy Clifton’s Doctoral Research). Much of who the individual is and becomes in life (i.e., an array of personality, clinical, and well-being variables, including neuroticism, extraversion, optimism, curiosity, depression, life satisfaction, and so forth) may stem from unrecognized individual differences in perceived habitat-wide constraints, which we call primal world beliefs or primals. Primals include the belief that the world is dangerous and the belief that everything is interconnected. Whereas previous scholars have identified two

primals, we have empirically identified twenty-six. Theory and correlational relationships suggest primals play a pervasive yet overlooked role in human life.

Situational Strategies for Self-Control (John F. Templeton Foundation, PI Angela Duckworth). Students who can resist momentarily rewarding temptations in the service of more enduringly valued goals excel academically. One fundamental question concerns the relative effectiveness of diverse self-control strategies for school-age children. In this project, we addressed the following hypotheses: 1. Situation selection and modification strategies increase self-controlled behavior more effectively than do cognitive strategies initiated later in the process of impulse generation. Situation selection and modification strategies diminish feelings of effort or distress relative to cognitive strategies³. The behavioral benefits of situation modification and selection are partially mediated by the less effortful phenomenology of these self-control strategies.

Performance Task Measures of Self-Control and Grit (Walton Family Foundation, PI Angela Duckworth). Our goal is to develop a suite of performance tasks assessing self-control and grit for middle school and high school students.

Character Development in Adolescence (Templeton Foundation, PI-Dr. Angela Duckworth). The primary aims of the project are: (1) to examine the impact of character strengths on academic success, social functioning, and psychological well-being; and (2) to examine potential interactions and overlap among character strengths. The primary measurement aims of the project are: (1) to develop age-appropriate, ecologically valid, teacher-report and self-report questionnaires assessing behavioral, cognitive, and motivational dimensions of these character strengths for use by both researchers and educational practitioners; (2) to create protocols and scoring rubrics for semi-structured interviews with adolescents about these strengths for use by researchers; (3) to examine evidence of reliability and construct validity (i.e., convergent, discriminant, and predictive validity) of newly developed questionnaires; and (4) in partnership with the Character Lab, to promote the use of valid measurement practices in the construction and evaluation of character development interventions.

Online Performance Tasks of Academic Diligence (University of Notre Dame, under a Templeton Foundation grant: PI-Dr. Angela Duckworth). The primary aim of this grant is to develop scalable, online measures of academic diligence in a variety of domains. This involves rigorously piloting and revising novel tasks and culminates in a large-scale data collection in which we aim to validate these measures.

Building Grit via Online Interventions (Character Lab, PI-Dr. Angela Duckworth). This project has two primary aims: (1) to develop an online intervention that makes middle and high school students grittier, and (2) to develop a series of behavioral tasks that reliably measure grit. The proposed online intervention studies build upon a series of randomized-controlled interventions.

Character Counts: Development of a Character Growth Card (Character Lab, PI-Dr. Angela Duckworth). This project has three related aims: (1) to develop teacher-report and self-report questionnaires assessing character strengths in middle school students, (2) to establish evidence of these questionnaires' internal reliability, test-retest stability, convergent validity, discriminant validity, and predictive validity for a wide range of outcomes, and (3) to develop a

format for reporting data from these questionnaires that makes salient to students changes in their character ratings over time and encourages them to set goals for improvement and plan for them.

Getting Grittier: Grit Curriculum & Professional Development for RBCS Elementary & Middle School (Mellon Family Foundation: PI-Dr. Duckworth). To meet the needs of students and families, RBCS plans to increase enrollment by 52%, from 485 to 730 students, and create a leading middle school serving grades 6 through 8. In addition to a rigorous core academic curriculum, we believe that helping students build character will be essential to their long-term success. Educators and researchers agree that character strengths like “grit” are highly correlated with academic, social, health, and professional success. While the RBCS elementary school builds character through a myriad of activities, we plan to design a middle school that deliberately and systematically fosters grit and other essential character strengths in every student through an advisory model.

Self-Control Strategies in School-Age Children (Robert Wood Johnson Foundation: PI-Dr. Duckworth). The primary aim of this study is to examine self-control strategies in children, aimed to help them bypass immediately rewarding temptations for rival activities whose benefits accrue much later. This project developed brief online interventions that teach self-control strategies to school-age children and adolescents, and test their effects on academic outcomes (e.g., homework completion, grades) and physical outcomes (e.g., healthy eating, physical activity).

Research Network on the Determinants of Life Course Capabilities and Outcomes (National Institute on Aging, PI Duckworth). The goal of this project is to better understand the underlying causes/sources of early inequality, how it affects individual capabilities later in life, and whether there are key times when intervention would improve capabilities.

Early Child Development Programs: Effective Interventions for Human Development (National Institute of Child Health and Human Development, Co-I Duckworth). This project promises substantial increases in knowledge of ECD by exploiting a rich new data set with a national representative longitudinal sample of 15,000 children initially 0-5y of age and their families with linked data that permit extensive characterization of the children and their family members and the ECD programs to which they have been exposed in Chile.

Allyson Mackey Research Summary: Dr. Mackey and her team are studying how early experiences impact both the development of specific brain circuits, and the global pace of child development. They have collected a sufficient data set to begin testing the hypothesis that stress speeds up maturation by increasing allostatic load and accelerating aging processes. Consistent with this theory, they have found that higher stress exposure, and lower socioeconomic status, are associated with accelerated dental maturation, which in turn is associated with mental health risk (McDermott et al., in prep).

They are also testing the hypothesis that cognitive enrichment slows down maturation by sending signals that current knowledge frameworks, and associated neural network configurations, are insufficient to respond to new and varied positive experiences. In a cognitively complex environment, with ample opportunities to learn new things, and substantial encouragement to do

so, the brain will maintain high plasticity for longer. Novel experiences heighten plasticity through boosting neuromodulators, including dopamine and noradrenaline, involved in motivation and attention. Children from low socioeconomic backgrounds, and those who experience high levels of stress, show blunted maturation of dopamine circuitry, potentially impacting motivation and limiting plasticity (Park et al., in prep). Indeed, adults with stronger connectivity between ventral tegmental area, a region that synthesizes dopamine, and frontoparietal cortical regions are better able to learn a novel frontoparietal task (Boroshok et al., in prep). Consistent with the theory that cognitive enrichment slows maturation, they have found that children who engage in more play show slower segregation of networks that support internal (default mode) and external attention (salience), which in turn is associated with greater creativity (Leonard et al, in prep).

Their theories will be best tested in a large, diverse, and representative sample far beyond what could be collected in their lab alone. They secured funding from NIDA to contribute to the planning for a large study of 7,500 children followed from before birth through age 8. Funding supports data collection on 100 children, as well as the development of better measures of the home environment, and better MRI sequences.

Finally, they have begun to move beyond correlational studies towards testing whether changing children's environments causes changes in their minds and brains, with an eye towards developing scalable interventions. They are focusing on behavioral strategies to boost intrinsic motivation, and dopamine, to enhance plasticity. For example, they found that providing children with feedback that they are improving on a task leads them to take on challenges, and that taking over, and solving a problem for kids, impairs persistence. They collected preliminary data showing that encouraging children to ask questions improves their curiosity, and enhances learning. These data supported a new grant from the Jacobs Foundation to test how practicing asking questions changes cognitive aspects of curiosity, and connectivity of dopamine circuitry.

EDUCATION: GRADUATE AND UNDERGRADUATE

The Master of Applied Positive Psychology (MAPP). The MAPP program has completed its fifteenth year and this program has been successful in academic and financial terms. The number and quality of applicants and matriculates has been consistently high and the students have given the program high marks in their evaluations. Following are the number of applicants and admissions each year:

	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13
Applications	106	111	123	166	163	181	178	236
Admits	34	36	41	38	45	36	36	36
	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Applications	198	166	162	209	178	189	182	187
Admits	39	32	38	39	42	47	49	50(est.)

In line with the PPC’s stated mission of promoting education, PPC faculty, post-doctoral fellows and graduate students teach the following undergraduate and graduate-level courses through the School of Arts and Sciences and the College of Liberal and Professional Education:

Martin Seligman

- MAPP 600: Intro to Positive Psychology (graduate level)

Angela Duckworth

- MAPP 601: Research Methods and Evaluation (graduate level)
- Psych 005: Grit Lab: Fostering Passion and Perseverance (undergraduate level)

James Pawelski

- MAPP 602: Foundations of Positive Interventions (graduate level)
- MAPP 710: Humanities and Human Flourishing (graduate level)

Leona Brandwene

- MAPP 603: Perspectives on Well-being (graduate level)
- MAPP 714: Applying Positive Interventions in Institutions (graduate level)

Paul Rozin

- Session for MAPP (invited speaker)

Karen Reivich

- MAPP 708: Positive Psychology and Individuals (graduate level)

Judith Saltzberg

- MAPP 708: Positive Psychology and Individuals (graduate level)
- MAPP 800: Capstones (graduate level)

Laura Taylor

- MAPP 602: Foundations of Positive Interventions (graduate level) – Assistant Instructor
- MAPP 710: Humanities and Human Flourishing (graduate level) – Assistant Instructor

Damien Crone

- **MAPP 710: Humanities and Human Flourishing (graduate level) – Assistant Instructor**

Michael Baime

- MAPP 603: Approaches to Well-being (graduate level) – Guest Speaker

David Yaden

- MAPP 600: Intro to Positive Psychology (graduate level) – Assistant Instructor
- MAPP 708: Positive Psychology and Individuals (graduate level) – Guest Speaker

Alejandro Adler

- MAPP 712: Positive Education (graduate level) – Guest Speaker

Lyle Ungar

- MAPP 600: Intro to Positive Psychology (graduate level) – Guest Speaker

Chris (John) Feudtner

- MAPP 714: Applying Positive Interventions in Institutions (graduate level) – Guest Speaker

Meredith Myers

- MAPP 714: Applying Positive Interventions in Institutions (graduate level) – Guest Speaker

RESILIENCE TRAINING PROGRAMS

Since 2007, we have delivered about 300 Penn Resilience Programs to more than 60,000 people. Many of these programs are train-the-trainer programs in which we train people how to teach resilience skills to others, using a structured curriculum. Attendees of these programs have gone on to teach these skills to more than a million people around the world. These train-the-trainer programs are an effective model for large-scale and sustainable dissemination of the resilience skills.

These programs have been delivered to a variety of populations – educators (K-12 and college), law enforcement personnel, U.S. Army soldiers, health care professionals, mental health professionals, a professional sports team, and corporate executives and their employees.

These training programs have been a success as judged by the participant satisfaction ratings and repeat contracts with sponsors. Participant satisfaction ratings for all our clients have been very good or excellent.

Here is a brief background on our resilience programs: Resilience is teachable. From 1990 to 2007, Dr. Martin Seligman and his colleagues, Dr. Jane Gillham, Dr. Karen Reivich, and Peter Schulman, received over \$10 million dollars in a series of federal grants from the National Institute of Mental Health (NIMH) and the U.S. Department of Education to conduct research and development on resilience programs with three different populations – middle school students, high school students, and college students. This series of large scale, longitudinal, controlled studies showed that individuals who attended the resilience programs had significantly less depression, anxiety and conduct problems, and higher well-being and optimism than those in the control group. These empirical results have been published in peer-reviewed journal publications, documenting the benefits of these programs.

Drs. Seligman, Reivich, and Gillham are leaders in their fields. Dr. Seligman is well-known for his ground-breaking work in depression, helplessness, and Positive Psychology, and Dr. Reivich and Dr. Gillham are leaders in the field of depression prevention and school-based intervention research. The Penn Positive Psychology Center team has more than 30 years of experience developing and delivering resilience programs using a train-the-trainer model.

In 2007, we started offering our resilience programs as a fee-for-service. Our Director of Positive Psychology and Resilience Training, lead curriculum developer and head trainer, Dr. Karen Reivich, has led all aspects of this delivery and developed a large cadre of trainers to carry out these programs. This has enabled Penn to deliver many large-scale training programs.

RESEARCH PUBLICATIONS 2019-2020

Martin E.P. Seligman Publications:

- Book: Seligman, M. (2018). *The hope circuit: A psychologist's journey from helplessness to optimism*. NY: Public Affairs (Hachette).
- Book: Rashid, T. & Seligman, M. (2018). *Positive psychotherapy: Clinician manual*. N.Y.: Oxford University Press.
- Book: Rashid, T. & Seligman, M. (2018). *Positive psychotherapy: Workbook*. N.Y.: Oxford University Press.
- Seligman, M.E.P. (2019). Positive psychology: A personal history. *Annual Review of Clinical Psychology*, 15, 1-23. <https://doi.org/10.1146/annurev-clinpsy-050718-095653>.
- Seligman, M.E.P. & Adler, A. (2019). Positive Education 2019. In Global Council for Happiness and Wellbeing (Eds.), *Global Happiness and Wellbeing Policy Report 2019*. New York: United Nations Sustainable Development Solutions Network. https://s3.amazonaws.com/ghwbpr-2019/UAE/GH19_Ch4.pdf
- Hassett, A. L., Fisher, J. A., Vie, L. L., Kelley, W. L., Clauw, D. J., & Seligman, M.E.P. (2019). Association between pre-deployment optimism and onset of post-deployment pain in US Army soldiers. *JAMA Network Open*, 2(2), e188076.
- Seligman, M.E.P., Allen, A. R., Vie, L. L., Ho, T. E., Scheier, L. M., Cornum, R., & Lester, P. B. (2019). PTSD: Catastrophizing in combat as risk and protection. *Clinical Psychological Science*, 7(3), 516-529. <https://doi.org/10.1177/2167702618813532>
- Seligman, M.E.P. (2019). Constructive journalism and Moyers' dictum. *Journalism*, 20 (4), 489-491.
- Clifton, J. D., Baker, J. D., Park, C. L., Yaden, D. B., Clifton, A. B., Terni, P., ... & Seligman, M.E.P. (2019). Primal world beliefs. *Psychological Assessment*, 31(1), 82.
- Shrestha, A., Ho, T. E., Vie, L.L., Labarthe, D. R., Scheier, L. M., Lester, P. B., & Seligman, M.E.P. (2019). Comparison of cardiovascular health between U.S. Army and civilians. *Journal of the American Heart Association*. DOI: 10.1161/JAHA.118.009056
- Reece, A., Yaden, D., Kellerman, G., Robichaux, A., Goldstein, R., Schwartz, B., Seligman, M., & Baumeister, R. (2019). Mattering is an indicator of organizational health and employee success. *The Journal of Positive Psychology*. <https://doi.org/10.1080/17439760.2019.1689416>

James Pawelski Publications:

- Rege, M., Hanselman, P., Solli, I. F., Dweck, C. S., Ludvigsen, S., Bettinger, E., Crosnoe, R., Muller, C., Walton, G., Duckworth, A. L., & Yeager, D. S. (in press). How can we inspire nations of learners? Investigating growth mindset and challenge-seeking in two countries. *American Psychologist*.
- Book Series: Pawelski, J. O. (Series Editor) (in preparation). Series of nine volumes on the Humanities and Human Flourishing. New York: Oxford University Press.
- Book: Tay, L., & Pawelski, J. O. (Eds.) (in preparation). *The Oxford handbook of positive psychology on the arts and humanities*. New York: Oxford University Press.
- Book: Pawelski, S. P., & Pawelski, J. O. (2018). *Happy together: Using the science of positive psychology to build love that lasts*. New York: Tarcher Perigee. (Imprint of Penguin Random House).

- Shim, Y., Jebb, A. T., Tay, L., & Pawelski, J. O. (in progress). Arts and humanities interventions for flourishing in healthy adults: A mixed studies systematic review.
- Pawelski, J. O. (in press). The elements model: Toward a new generation of positive interventions. *Journal of Positive Psychology*.
- Pawelski, J. O. (2020). Today, tomorrow, and the day after tomorrow: A case study for the psychology of joy. *Journal of Positive Psychology*, 15, 107-111. doi: 10.1080/17439760.2019.1695142
- Vaziri, H., Tay, L., Scott, P., Bradburn N. M., Pawelski J. O. (2019). STEM or humanities? Toward a balance of interest fit. *Frontiers in Education*, vol 4, article 143. doi.org/10.3389/feduc.2019.00143
- Shim, Y., Tay, L., Ward, M., & Pawelski, J. O. (2019). The arts and humanities: An integrative conceptual framework for psychological research. *Review of General Psychology*, 23, 159-176.
- Vaziri, H., Tay, L., Keith, M. G., Pawelski, J. O. (2019). History, literature, and philosophy: A systematic review of positive functioning. *Journal of Positive Psychology*, 14, 695-723. doi:10.1080/17439760.2018.1545041

Angela Duckworth Publications:

- Rege, M., Hanselman, P., Solli, I. F., Dweck, C. S., Ludvigsen, S., Bettinger, E., Crosnoe, R., Muller, C., Walton, G., Duckworth, A. L., & Yeager, D. S. (in press). How can we inspire nations of learners? Investigating growth mindset and challenge-seeking in two countries. *American Psychologist*.
- Spann, C. A., Yu, A., Galla, B. M., Duckworth, A. L. & D'Mello, S. K. (in press). Is academic diligence domain-specific or domain-general? An investigation of the math, verbal, and spatial Academic Diligence Tasks with middle schoolers. *Learning and Individual Differences*.
- Galla, B. M., Tsukayama, E., Yu, A., Park, D., & Duckworth, A. L. (2020). The mindful adolescent: Developmental changes in nonreactivity to inner experiences and its association with emotional well-being. *Developmental Psychology*, 56(2), 350-363. doi:10.1037/dev0000877
- Gardner, M., Hutt, S. J., Kamentz, D., Duckworth, A. L. & D'Mello, S. K. (2020). How does high school extracurricular participation predict bachelor's degree attainment? It is complicated. *Journal of Research on Adolescence*. doi:10.1111/jora.12557
- Porter, T., Molina, D. C., Blackwell, L., Roberts, S., Quirk, A., Duckworth, A. L., & Trzesniewski, K. (2020). Measuring mastery behaviors at scale: The Persistence, Effort, Resilience and Challenge-Seeking task (PERC), *Journal of Learning Analytics*, 7(1), 5-18. doi:10.18608/jla.2020.71.2
- Chang, E. H., Milkman, K. L. Gromet, D. M., Rebele, R. W., Massey, C., Duckworth, A. L., & Grant, A. M. (2019). The mixed effects of online diversity training. *Proceedings of the National Academy of Sciences*, 116(16), 7778-7783. doi:10.1073/pnas.1816076116
- Duckworth, A. L. (2019). Using psychological science to help children thrive. *Perspectives on Psychological Science*, 14(1), 34-36.
- Duckworth, A. L., Milkman, K. L., & Laibson, D. (2019). Beyond willpower: Strategies for reducing failures of self-control. *Psychological Science in the Public Interest*, 19(3), 102-129.

- Duckworth, A. L., Quirk, A., Gallop, R., Hoyle, R. H., Kelly, D. R., & Matthews, M. D. (2019). Cognitive and noncognitive predictors of success. *Proceedings of the National Academy of Sciences*, 116 (47), 23499-23504. doi:10.1073/pnas.1910510116
- Duckworth, A. L., Taxer, J., Eskreis-Winkler, L., Galla, B. M., & Gross, J. J. (2019). Self-control and academic achievement. *Annual Review of Psychology*, 70, 373-399.
- Eskreis-Winkler, L., Milkman, K. L., Gromet, D. M., & Duckworth, A. L. (2019). A large-scale field experiment shows giving advice improves academic outcomes for the advisor. *Proceedings of the National Academy of Sciences*, 116(30), 14808-14810. doi:10.1073/pnas.1908779116
- Galla, B. M., Shulman, E. P., Plummer, B. D., Gardner, M., Hutt, S. J., Goyer, J. P., ... & Duckworth, A. L. (2019). Why high school grades are better predictors of on-time college graduation than are admissions test scores: The roles of self-regulation and cognitive ability. *American Educational Research Journal*, 56(6), 2077-2115. doi:10.3102/0002831219843292
- Grenell, A., White, R. E., Prager, E. O., Schaefer, C., Kross, E., Duckworth, A. L., Carlson, S.M. (2019). Experimental paradigm for measuring the effects of self-distancing in young children. *Journal of Visualized Experiments*, 145, e59056. doi:10.3791/59056
- Hutt, S. J., Gardner, M., Duckworth, A. L., D'Mello, S. K. (2019). Evaluating fairness and generalizability in models predicting on-time graduation from college applications. In C.F. Lynch, A. Merceron, M. Desmarais, & R. Nkambou (Eds.), *Proceedings of the 12th International Conference on Educational Data Mining (EDM 2019)* (pp. 79-88).
- Peña, P. A., Pérez-Díaz, I., Pulido-Ayala, A. K., Osorio-Landa, H. K., López-Navarro, J. M., Duckworth, A. L., & Jena, A. B. (2019). Association of grit scores with treatment adherence and biomarkers in patients with type 2 diabetes. *JAMA Network Open*, 2(9), e1911476. doi:10.1001/jamanetworkopen.2019.11476
- Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., ... Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature*, 573, 364-369. doi:10.1038/s41586-019-1466-y

Allyson Mackey Publications:

- Tooley U.A.¹, **Mackey A.P.**, Ciric, R., Ruparel, K., Moore, T.M., Gur, R.C., Gur, R.E., Satterthwaite T.D., & Bassett, D.S. (2020). Influence of Socioeconomic Status on Functional Brain Network Development. *Cerebral Cortex*.
- Leonard, J.A.², Romeo, R.R., Park, A.¹, Takada, M.E., Robinson, S.T., Grotzinger, H., Last, B.S., Finn, A.S., Gabrieli, J.D.E., & **Mackey, A.P.** (2019) The neural correlates of reasoning differ by socioeconomic status in development. *Developmental Cognitive Neuroscience*. 36, 100641.
- Mackey, A.P.** (2019). Commentary: Broadening the scope of educational neuroscience, reflections on Thomas, Ansari, and Knowland (2019). *in press* at The Journal of Child Psychology and Psychiatry.

David Yaden Publications:

- Book: Yaden, D. B., Zhao, Y., Peng, K., Newberg, A. B. (Eds.). (2020). *Rituals and Practices in World Religions: Cross-Cultural Scholarship to Inform Research and Clinical Contexts*. Springer.

- Book Contracted: Yaden, D. B. & Newberg, A. B. (in prep). *The Varieties of Spiritual Experience: A 21st Century Update*. Oxford University Press.
- Yaden, D. B. & Anderson, D. E. (under review). The psychology of philosophy. *Philosophical Psychology*.
- Yaden, M. E., Yaden, D. B., Buffone, A. E. K., Eichstaedt, J. C., Crutchley, P., Smith, L., Cass, J. L., Callahan, C. A., Rosenthal, S., R., Ungar, L. H., Schwartz, H. A., Hojat, M. (under review). Linguistic analysis of empathy in medical school admission essays. *International Journal of Medical Education*.
- Eichstaedt, J. C., Yaden, D. B., Ribiero, F., & Kern, M. L. (in press). Lifestyle and wellbeing: Exploring behavioral and demographic covariates in a large US sample. *International Journal of Wellbeing*.
- Buffone, A., Giorgi, S., Jordan, M., Yaden, D. B., Eichstaedt, J., Schwartz, A., Ungar, L., Bloom, P. (under review). Characterizing empathy and compassion using computational linguistic analysis. *Psychological Science*.
- Buffone, A., Giorgi, S., Jones, Yaden, D. B., J., Kern, P. K., Smith, L., Elstein, J., Kregor., J., P., Crutchley, Eichstaedt, J., Ungar, L., Schwartz, H. A. (under review). The state of trust in the US: Measuring generalized trust in individuals and regions using computational linguistic analysis. *Personality and Social Psychology Bulletin*.
- Chrysikou, E. G., Jacial, C., Yaden, D. B., Van Dam, W., Kaufman, S. B., Wintering, N. A., Abraham, R., Jung, R. E., Newberg, A. B. (under review). Differences in brain activity patterns during creative idea generation between eminent and non-eminent thinkers. *Neuroimage*.
- Yaden, D. B., Graziosi, M., & Vadeloso, P. (accepted). A Preregistered Direct Replication of "Awe, Uncertainty, and Agency Detection." *Psychological Science*.
- Giorgi, S., Yaden, D. B., Eichstaedt, J. C., Ashford, R. D., Buffone, A. E., Schwartz, H. A., ... & Curtis, B. (2020). Cultural Differences in Tweeting about Drinking Across the US. *International Journal of Environmental Research and Public Health*, 17(4), 1125.
- Chirico, A., Clewis, R. R., Yaden, D. B., & Gaggioli, A. (2020). Nature versus Art as Elicitors of the Sublime: A Virtual Reality study. *PLOS One*.
- Chrysikou, E. G., Wetz, C., Yaden, D. B., Kaufman, S. B., Bacon, D., Wintering, N. A., Jung, R. E., Newberg, A. B. (under review). Differences in brain morphometry predict creative performance in eminent and non-eminent thinkers. *Neuroimage*.
- Yaden, D. B., Kaufman, S. B., Hyde, E., Chirico, A., Gaggioli, A., Zhang, J. W., Keltner, D. (2019). The development of the awe experience scale (AWE-S): A multifactorial measure for a complex emotion. *Journal of Positive Psychology*.
- Graziosi, M., & Yaden, D. (2019). Interpersonal awe: Exploring the social domain of awe elicitors. *Journal of Positive Psychology*, 1-9.
- Reece, A., Yaden, D., Kellerman, G., Robichaux, A., Goldstein, R., Schwartz, B., ... & Baumeister, R. (2019). Mattering is an indicator of organizational health and employee success. *Journal of Positive Psychology*, 1-21.
- Medaglia, J. D., Yaden, D., Helion, C., & Haslam, M. (2019). Moral attitudes and willingness to induce cognitive enhancement and repair with brain stimulation. *Brain Stimulation*.
- Kaufman, S. B., Yaden, D. B., Hyde, E., & Tsukayama, E. (2019). The light vs. dark triad of personality: Contrasting two very different profiles of human nature. *Frontiers in Psychology*, 10, 467.
- Clifton, J. D., Baker, J. D., Park, C. L., Yaden, D. B., Clifton, A. B., Terni, P., ... & Seligman, M.E.P. (2019). Primal world beliefs. *Psychological assessment*, 31(1), 82-89.

Jeremy Clifton Publications:

- Clifton, J. D. W. (in press). Measuring primal world beliefs. In W. Ruch, A. Bakker, L. Tay, & F. Gander (Eds.), *Handbook of positive psychology assessment*. European Association of Psychological Assessment.
- Clifton, J. D. W. (in press). Happy in a crummy world: Implications of primal world beliefs for increasing well-being through positive psychology interventions. *Journal of Positive Psychology*.
- Clifton, J. D. W. (in press). Testing if primals reflect experiences—At least some experiences one researcher happened to think up. *Frontiers in Psychology*.
- Stahlmann, A. G., Hofmann, J., Ruch, W., Heinz, S., & Clifton, J. D. W. (2020). The higher-order structure of primal world beliefs in German-speaking countries: Adaptation and initial validation of the German Primals Inventory (GPI-66). *Personality and Individual Differences*, 163, 110054. Full text pdf available at ResearchGate.
- Clifton, J. D., & Kim, E. S. (2020). Healthy in a crummy world: Implications of primal world beliefs for health psychology. *Medical Hypotheses*, 135, 109463. <https://doi.org/10.1016/j.mehy.2019.109463>. Full text PDF available here.
- Clifton, J. D. W. (2019). Managing validity vs. reliability trade-offs in scale-building decisions. *Psychological Methods*. Advance online publication. <http://dx.doi.org/10.1037/met0000236>. Full text PDF available at ResearchGate.
- Clifton, J. D. W., Baker, J. D., Park, C. L., Yaden, D. B., Clifton, A. B. W., Terni, P., Miller, J. L., Zeng, G., Giorgi S., Schwartz, H. A., & Seligman, M. E. P. (2019). Primal world beliefs. *Psychological Assessment*, 31(1), 82-99. <http://dx.doi.org/10.1037/pas0000639>. Full-text PDF available at ResearchGate.
- Oakerson, R. J., & Clifton, J. D. W. (2017). The Neighborhood as Commons: Reframing Neighborhood Decline. *Fordham Urban Law Journal*, 44, 411-450. <https://ir.lawnet.fordham.edu/ulj/vol44/iss2/5>. Full-text PDF available at ResearchGate.
- Clifton, J. D. W. (2014). Review of the eudaimonic turn: Well-being in literary studies. *Journal of Psychology in Africa*, 24(1), 123-124.

World Well-Being Project Research:

- Abebe, R., Giorgi, S., Tedijanto, A., Buffone, A. & Schwartz, H.A. (2020). Quantifying Community Characteristics of Maternal Mortality Using Social Media. In *The World Wide Web Conference*. bibtex
- Guntuku, S. C., Schneider, R., Pelullo, A., Young, J., Wong, V., Ungar, L., ... & Merchant, R. (2019). Studying expressions of loneliness in individuals using twitter: an observational study. *BMJ Open*, 9(11). bibtex
- Lynn, V. E., Giorgi, S., Balasubramanian, N., & Schwartz, H. A. (2019). Tweet classification without the tweet: An empirical examination of user versus document attributes. Paper presented at the *Third Workshop on Natural Language Processing and Computational Social Science* (Association for Computational Linguistics), Minneapolis, Minnesota. bibtex
- Matero, M., Idnani, A., Son, Y., Giorgi, S., Vu, H., Zamani, M., Limbachiya, P., Guntuku, S. C., & Schwartz, H. A. (2019, June). Suicide risk assessment with multi-level dual-context language and BERT. Paper presented at the *Sixth Workshop on Computational Linguistics and Clinical Psychology*, Minneapolis, Minnesota. bibtex
- Li, M., Guntuku, S. C., Jakhetiya, V., & Ungar, L. H. (2019). *Exploring (dis-) similarities in*

emoji-emotion association on Twitter and Weibo. Paper presented at the *2nd International Workshop on Emoji Understanding and Applications in Social Media*, San Francisco, CA.

Guntuku, S. C., Li, M., Tay, L., & Ungar, L. H. (2019). Studying cultural differences in emoji usage across the east and the west. *arXiv preprint arXiv:1904.02671*.

Guntuku, S. C., Preotiuc-Pietro, D., Eichstaedt, J. C., & Ungar, L. H. (2019). What twitter profile and posted images reveal about depression and anxiety. *arXiv preprint arXiv:1904.02670*.

Clifton, J. D., Baker, J. D., Park, C. L., Yaden, D. B., Clifton, A. B., Terni, P., Miller, J. L., Zeng, G., Giorgi, S., Schwartz, H. A., & Seligman, M. E. (2019). Primal world beliefs. *Psychological Assessment*, *31*(1), 82-89. <http://dx.doi.org/10.1037/pas0000639>.