



Project Description

Project Title: Opening Minds: Cultivating Intellectual Humility and Creativity through Play

Executive Summary:

Sir John Templeton recognized that intellectual humility (IH) was a necessary precondition of being open to new ideas. How can we become, as he urged, “humble as children,” willing and able to consider a more expansive scope of possibilities? Here we take Sir John’s charge and investigate how a core feature of childhood--improvised play--may cultivate IH and creativity. Like play, IH and creativity require fully engaging with and exploring novel ideas and perspectives.

At the heart of this proposal are two low-cost interventions to predispose a playful state of mind: improvisational theater between adults and pretend play with a child, which we will compare to well-matched control activities. The mantra of improvisers is “yes, and”, reminding them to nonjudgmentally accept (“yes”) and build off (“and”) each other’s ideas. Pretend play with a child also requires a less judgmental, more open mindset. We will test whether the mindset fostered by these interventions facilitates creativity and encourages deep listening to people with conflicting views such that those views are better heard, considered, and remembered. We will make training materials for successful interventions freely available to help people foster IH and creativity through play.

Project Description:

The project will include 3 research strands each led by one of the investigators to address the following questions:

Q1. Do people higher in IH tend to have more playful, creative, and open-minded conversations? (Strand 1)

Q2. Do improvisation between adults and pretend play with children increase the curiosity of conversation partners and the exploratory nature of conversation? (Strands 2 and 3)

Q3. Do improv and pretend play encourage a greater willingness to adopt new perspectives? (Strands 2 and 3)

Q4. Do improv and pretend play foster creativity? (Strands 2 and 3)

Strand 1 relates conversational style between strangers to their self-reported IH. We will build on an existing study in which 66 undergraduates each had 10 unstructured 10-minute conversations with same-gender partners. All 322 conversations were recorded and transcribed. After each conversation, participants rated the conversation and their partner; they then watched a recording of the session and provided continuous connection ratings. We trained a topic model to locate each speech turn in the conversations in a high-dimensional topic space. For the current project, we will contact the participants and pay them to complete the IH scale via email. We will use dynamic topic modeling, acoustic voice analysis, and computer-based pose estimation to quantify how exploratory and unpredictable the participants’ conversations are, how engaged and curious they are, how much playful positive affect they convey, and how synchronized they are with their partners. The round-robin design, in which each participant interacts with 10 other participants, enables us to estimate the unique variance contributed by each participant and correlate it with their self-reported IH scores (Q1). Additional studies will investigate the behavioral and conversational markers of intellectual humility during arguments with close others.

Strand 2 will experimentally test the hypothesis that improvisational instruction temporarily increases conversational playfulness (Q2) and willingness to update beliefs in the face of new information (Q3). In the initial study of Strand 2, participants will be randomly assigned in small groups to either an improv intervention or an active control condition (competitive game). We will consult with Kristin Krueger, PhD, a clinical psychologist who specializes in improv-based therapy and who will help us design the tasks. Immediately after the improv sessions, participants will have a 10-minute discussion with a partner with whom they disagree on a particular issue. We will code the same conversational variables as in Strand 1 (Q2). In addition, we will use high resolution pupillometry to gauge shared attention (Q3). They will then complete a post-conversation survey to measure how much they liked their partner, enjoyed the conversation, remember what their partner said, and changed their opinions (Q3). Additional studies will investigate the impact of long-term improv exposure on trait-level IH and creativity (Q4).

Studies in Strand 3 will explore the conjecture that engaging in pretend play with children will foster openness, curiosity, creativity, and IH. In the initial study, adult participants will be randomly assigned to interact with children in a way that involves either pretend play or following pre-set instructions. Participants in the pretend play condition will be encouraged to take turns with the child imaginatively building and embellishing on an emerging story line. After engaging with children, participants will complete a variety of creativity measures



including both standard ones, (e.g. the unusual uses test and remote associates) and more situation specific ones (developing toys and games for children). Additional studies will investigate the impact of pretend play with children on a variety of other pertinent measures including openness to experience, curiosity, IH, and conversational perspective taking.

Project Description Attachment:

Statement of Significance:

It is easier than ever to avoid ideas that challenge our beliefs and we increasingly dislike people who disagree with us. How might we temper this trend and cultivate intellectual humility (IH)? Play may be one way to foster curiosity, exploration, openness, and tolerance. Positive emotions associated with play disrupt habits of mind, broadening the realm of cognitive and behavioral possibilities. Play also increases social competence and tolerance by inoculating people to social stress in a safe context. Children naturally spend much of their lives in play; an adaptation that promotes flexibility and greater exploration of the idea space during learning. Improv distills play to its essence: it involves exploration, spontaneity, and being receptive to others' ideas, never dismissive. Preliminary evidence suggests improv-based therapy eases social anxiety and increases divergent thinking, making it a promising tool for increasing IH. Still, research on improv is in its infancy. Similarly, nothing is known about whether playing with children might return adults to childlike open-mindedness. Recent advances in behavioral measurement and conversation analysis will enable this timely exploration of the adaptive consequences of a playful state of mind.

Outputs:

The analysis and writing of the initial study of Strand 1 will be completed at Dartmouth in the first year. We will also develop and pilot the intervention and tasks for Strands 2 (at UVA) and 3 (at UCSB) in the first year. Studies in Strand 2 and 3 will be replicated across sites. The success of each strand is independent of the others, as they examine distinct aspects of the playfulness-IH relationship. Strand 1 examines trait-level IH and conversational style, while Strands 2 and 3 examine different manipulations intended to temporarily shift IH and conversational style.

All three strands will result in scientific papers and talks delivered to both expert and public audiences over the course of the 3 funded years and beyond. In addition, a dedicated website will house video abstracts that explain the studies in an engaging way to a broad audience, which will also be broadcast on social media. We also anticipate significant media attention. Should play increase openness to other viewpoints, we will co-write an op-ed about this connection. If the Strand 2 intervention is successful, we will create a free online improv-based exercise guide for schools and organizations and a guide for caregivers to foster an improv-inspired mindset during imaginative play with their children.

Outcomes:

Most adult leisure activities, including media consumption and rule-based games and sports, lack the defining features of play and therefore cannot confer its benefits. The goal of this project is to add more play back into the lives of adults.

The intended outcomes are as follows:

1. Determine whether creative play with a child and improv are effective means of building playfulness into the everyday lives of adults.
2. Develop and test a scalable set of play- and improv-based tools that families, schools, and organizations can use to build IH, and along the way, perhaps improve within-group relationships and well-being.
3. Renew focus on adult play within psychology. Play is a topic of inquiry in the non-human, developmental, and therapeutic literatures, but has received surprisingly little attention among people who study adult social behavior and emotion.
4. Communicate our findings with a broad audience through public lectures, blog posts, op-eds in major news media, and free online training materials.



The importance of this overarching question--how play opens the mind--combined with the rigor with which it will be tested, ensures that any results will be foundational to understanding how minds become more humble, tolerant and creative.

Capacity for Success:

The PI, Adrienne Wood (University of Virginia) studies the social functions and consequences of positive nonverbal behavior, with particular expertise on laughter and play. She uses acoustic analysis, computer vision behavior tracking, and machine learning, tools she will apply in the proposed work. Co-PI Thalia Wheatley (Dartmouth College, external faculty at the Santa Fe Institute) has received 3 Templeton grants, the most recent of which has led to new insights about curiosity that will inform research on intellectual humility. With her graduate student and collaborator on the proposed work, Emma Templeton, she has conducted the first phase of Study 1 and developed cutting-edge methods for modeling conversational dynamics including deep listening and exploration. Co-PI Jonathan Schooler (UC Santa Barbara) is the recipient of five previous Templeton grants and is a world-renowned expert on social cognition. Of particular relevance to the proposed work, he has conducted extensive research on creativity and meta-awareness. Dr. Kristin Krueger, a pioneering expert on improv-based therapy, will serve as consultant during development and implementation of the intervention. Together, the research team possesses unique expertise on conversation, curiosity, play, and changing minds.

Relation to Sir John Templeton's Donor Intent:

Sir John Templeton recognized that intellectual humility (IH) is integral to living a good life and to humanity's expansion of knowledge. As Richard Bollinger notes in the Strategic Priority Q&A, research must continue to refine the definition and measurement of IH--and indeed, the Study 1 will serve this goal by identifying verbal and nonverbal markers of IH. But Sir Templeton's vision was not simply to understand IH, but also to cultivate it, as Studies 2 and 3 do. We draw inspiration from Sir Templeton's words in *The Humble Approach*, "If we are not as humble as children, we may be unable to admit mistakes, seek advice, and try again." Fostering IH may not require learning a new skill, but simply returning to the primary occupation of childhood: play. If we bring a more playful mindset to our daily lives we may, as Sir Templeton said, "become increasingly humble about how little we know, we may be more eager to search."

Project Relationship to Previous Grants: Yes

Project Relationship to Previous Grants - Please Explain:

The ideas at the core of this submission were inspired by the grant *The Virtue of Curiosity: How Eagerness to Learn Fosters Learning, Creativity and Engagement* (Grant #60844, \$1.95m, End date: 11/30/2019). This grant investigates the foundational processes by which curiosity shapes our behavior, our memories, and our actions in the world. The specific ideas at the core of the present proposal address a related but independent and novel question about how play may promote IH, tolerance, and creativity.

Proposed Project Start Date: 07/01/2020

Proposed Project End Date: 06/30/2023