A conversation with Daniel Greene, July 28, 2015

Participants

- Daniel Greene – Researcher, Project for Education Research That Scales (PERTS) and Lytics Lab, Stanford University
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Note: These notes were compiled by the Open Philanthropy Project and give an overview of the major points made by Mr. Greene.

Summary

The Open Philanthropy Project spoke with Mr. Greene of PERTS and Stanford University as part of its investigation into anti-procrastination interventions. Conversation topics included experimentally tested interventions in the fields of goal pursuit and motivation and resources for additional information.

Experimental testing of anti-procrastination interventions

Although there have been many randomized controlled trials (RCTs) on the subjects of self-regulation, motivation, willpower, and goal pursuit, very little research has been conducted on interventions targeted explicitly at procrastination. Much existing research focuses on goals and how people pursue different types of goals. In this context, procrastination represents a kind of deviation from the pursuit of a goal, in which the subject knows what the goal is and is aware of the deviation, but is tempted by other pursuits that offer higher short-term value. This perspective on goal pursuit is usually accompanied by treatment that focuses on changing the environment to make tempting distractions less accessible, changing the value structure, or delaying gratification.

Pre-commitment versus post-commitment interventions

Goal pursuit interventions can be roughly divided into two categories:

- Interventions that are implemented before a person decides to commit to a goal, increasing the motivation to commit strongly
- Interventions that are implemented after the person commits to a goal and lead to more effective pursuit of the goal

Most existing literature focuses on leading people to commit more strongly to the right goal, and relatively little focuses on the factors involved in implementing the plan to reach the goal. However, some literature on implementation intentions and behavioral economics (including popular books such as *Thinking, Fast and Slow* and *Predictably Irrational*) is relevant to the latter category. The book *Nudge,* which discusses changes in the environment that can positively affect behavior, may be particularly relevant. Mr. Greene is not aware of a good article that summarizes research on post-commitment interventions.

Examples of effective post-commitment interventions

Apart from implementation intentions, a goal pursuit technique that is supported with evidence from RCTs, and mental contrasting, which is somewhat less well supported, not many post-commitment interventions are supported by experimental evidence. Of the ones that are, most have not been shown to be domain-general.

Meeting basic physical needs

If the category of post-commitment interventions is broadly construed, it could include research on how meeting basic physical needs of nutrition and adequate sleep can improve achievement for people who have already identified their goals. Getting enough sleep, for instance, has been shown to improve learning outcomes.

Learning strategies

Another example of a domain-general intervention that might affect goal pursuit is the use of more effective learning strategies. If the goal is to learn a particular subject or skill, a person can employ strategies to memorize things or understand the material more deeply. One of these strategies is spaced repetition, which involves dividing practice into smaller chunks with breaks in between, instead of practicing for one unbroken chunk of time. A related strategy is interleaving practice, which involves switching repeatedly between different subtasks rather than focusing on each subtask one at a time. This variation between subtasks seems to improve learning outcomes because it more closely resembles how knowledge is used in everyday life. However, these strategies are likely more related to the mechanics of effective skill practice than to willpower and self-control.

Social commitment

Mr. Greene believes that forming social relationships with others who are trying to achieve the same goal ("accountability buddies") is likely to help people persist at goal pursuit. For example, the commitment applications Beeminder and StickK both allow users to share goals with friends. "Social commitment" is probably a useful key phrase to use when looking for this research.

Feedback on progress toward goals

Giving people clearly visible, quantifiable feedback on their progress is one technique which Mr. Greene believes is likely to be supported by RCTs. This requires defining the goal precisely enough that steps toward the goal are easily measurable.

One area that may be particularly relevant is literature on human–computer interaction. This is a subfield of psychology that studies the interfaces between people and computers, including designing interfaces that present options to, and elicit behavior changes from, users, which in turn change the computer system.

Mindset and belief interventions

The mindset interventions studied by Carol Dweck emphasize a learning-centered "growth mindset" over a "fixed mindset" that attributes success mainly to innate

intelligence or ability. These have been tested repeatedly using RCTs in various settings and have been shown to increase people's expectancy of success at goals and therefore make success more likely.

Mindset interventions seem to work primarily in the pre-commitment phrase of goal pursuit, in that they may strengthen people's commitment to their goals by making them believe in their ability to achieve them, which then encourages their pursuit of those goals. However, these beliefs may also affect the likelihood of achievement of a goal during pursuit. For example, Mr. Greene is currently studying the effects of a mindset intervention on people's interpretations of their experiences of goal pursuit.

Achievement goal literature

Achievement goal literature relates to how changing people's beliefs about their goals can affect performance, a concept that is supported by several RCTs. The organizational psychologists Gary Latham and Edwin Locke did much of the best-known research in this area. Locke and Latham's work found that rigorously defining goals in certain ways had positive effects on achievement. Specifically, setting goals that are quantifiable and difficult, but not impossible to achieve, makes people more likely to persist and succeed at achieving them. For instance, shifting from a more vague goal of "getting fit" to a more specific goal of "doing 10 push-ups a day" makes the task seem more concrete and achievable, and therefore can make procrastination less likely.

Attribution retraining

Attribution retraining has been the subject of some research in the education field. This describes interventions that aim to make students believe that success or failure is within their own control, not the result of chance or others' actions, which tends to increase expectancy of success.

Coping with threats

Another set of psychological interventions addresses people's responses to threats to their self-esteem or sense of identity, which can be detrimental to goal pursuit. These interventions teach people how to better cope with these threats, or give them different beliefs that lead them to reinterpret the perceived threat. Much research has been conducted and many interventions have been devised to help people address various types of threats, especially in educational environments. Some address feelings of belonging or exclusion, others involve self-affirmation, and others focus on changing the environment so that students reattribute their experiences to less threatening factors.

Another type of threat that can hinder performance is stereotype threat, which results when people identify with a stereotyped group and so are, or feel, at risk of confirming negative stereotypes about that group via their behavior.

Success spirals

"Success spirals" is the idea that small successes can lead to positive reinforcement, which in turn leads to increased confidence and further successes. Mr. Greene is not familiar with the strength of evidence for this proposal.

Resources for further information

Heidi Grant Halvorson

The 2011 book *Succeed,* by Heidi Grant Halvorson, gives a good summary of research on goal pursuit, including goal achievement literature, and provides practical ways for readers to incorporate effective goal pursuit techniques into their lives.

Other researchers

Peter Gollwitzer, a psychology professor at New York University, is one of the best-known researchers in the field of implementation intentions and might be a useful resource. Edwin A. Locke, one-half of the Locke and Latham research team, has considerable knowledge in the field of goal pursuit and could provide helpful guidance.

Beeminder and StickK

Some of the references listed on the websites for Beeminder and StickK could be useful resources. Both types of commitment software draw from diverse sources in the literature and package several techniques, each of which may have some positive effect, into a single application. Daniel Reeves and Bethany Soule know the literature in this field well and would be willing to answer questions about their work.