

Self-Theories of Intelligence

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Why do some very bright individuals do poorly in school and end up achieving little in life? Why do other, seemingly less bright people, rise to the challenges and accomplish far more than anyone ever expected? Much of my career has been devoted to answering these questions, and that's where social psychology comes in.

One of the most important things social psychology has done is to show us how profoundly people's beliefs affect their behavior. This has been shown very clearly in the realm of motivation and achievement. Do people believe their intelligence is a fixed trait or an expandable quality? Do they believe their failures are due to a lack of effort or a lack of ability? Do they believe they are doing a task to learn something new or to show how smart they are? These beliefs are key components of individuals' eagerness to learn, their love of challenge, and their ability to persist and thrive in the face of difficulty. This is why they are key factors in what people achieve—quite apart from their intellectual ability.

The most exciting thing about this is that beliefs can be changed. So, even more important than showing that beliefs matter for people's motivation and achievement, is showing that when you change their beliefs, you change their motivation and achievement. It is sometimes amazing to people who are not social psychologists that what looks like minor belief-changing interventions—teaching students a different view of intelligence, teaching them a different interpretation for failure,

or orienting them toward different reasons for achieving—end up having real effects on their school engagement and achievement. I have seen researchers from other fields be completely baffled by these results because they are used to seeing hugely expensive, large-scale, long-term, multifaceted interventions that yield only small effects. Yet, social psychologists understand the power of a carefully targeted intervention that changes a key belief and refocuses people's motivation in highly productive ways.

THE ROLE OF MOTIVATION IN ACHIEVEMENT

What role does motivation play in achievement? There are many researchers who argue that motivation is the key ingredient not simply in outstanding achievement, but also in extraordinary achievement. Their work suggests that creative genius itself grows out of the ability to sustain intense commitment for very long periods in the face of obstacles (Runco, Nemiro and Walberg, 1998; see also Hayes, 1989; Nickerson, 1999; Perkins, 1994; Weisberg, 1986; 1999). They tell us, much to our surprise, that many well-known geniuses were pretty much ordinary bright children who then became obsessed with something and, because of that obsession, ended up making enormous contributions (Howe, 1999; Simonton, 1999). This is true in science: Darwin's father was deeply disappointed in how ordinary his son seemed as a child (Simonton, 1999). It is true in philosophy: John Stuart Mill's father, in fact, was tickled to show that his ordinary child could be trained to be a world-famous philosopher (Howe, 1999). Tolstoy and William James were also seen by some as unexceptional children (Howe, 1999).

Even Mozart, whom we think of as composing in infancy, did not produce really original and noteworthy works until after more than 10 years of nonstop composing (Bloom, 1985; Hayes, 1989; Weisberg, 1999). Most of his early compositions were amateurish hodgepodes of other people's compositions. The same principle applies in athletics as well. We all know the story of how Michael Jordan was cut from his high school basketball team—which only increased his commitment to relentless practice until he became one of the greatest athletes of all time.

Yet, much of society is stubbornly wedded to the idea that accomplishment, especially outstanding accomplishment, is about endowment. After Mozart, Darwin, Michael Jordan, and Tiger Woods practice their skills feverishly and single-mindedly for years and years, we ignore this and instead believe that they were simply born with one-in-a-million ability. When Thomas Edison claimed that genius was 99 percent perspiration, and only 1 percent inspiration, we think he is just being modest. And when we hear that the ringlike structure of benzene came to Kekule, the great chemist, in a dream or that the brilliant poem "Kubla Khan" came to Samuel Taylor Coleridge in an opium-induced delirium, we think "Ah yes, that's genius," forgetting the years of training, commitment, and perseverance that led up to these episodes.

SELF-THEORIES OF INTELLIGENCE

In discussing beliefs that play a key role in motivation, I will focus on one particular kind of belief, namely, people's "theories" about their intelligence. I will begin by describing the two theories of intelligence that people hold: The belief that intelligence is a fixed trait that cannot be developed (which we have called an "entity" theory) versus the idea that intelligence is a malleable quality, a potential that can be cultivated (which we have called an "incremental" theory). I will then show how these beliefs affect the tasks students will take on, the effort they are willing to exert, their ability to cope with setbacks, and—ultimately—their academic performance.

As you will see, the belief in fixed intelligence can lead even the most able students to worry about how smart they are, to think they're dumb when they fail, to dislike and avoid effort, and to show impaired performance when they face academic difficulty (which even top students can experience when they enter a new school). The belief that intelligence can be developed, in contrast, makes students want to do just that: It leads them to value learning over looking smart, to enjoy effort and challenges, and to thrive in the face of difficulty (see Dweck, 1999).

Which is the correct view of intelligence? Is it fixed or is it something that can be developed? Psychologists have always taken and still take both views. Alfred Binet (1909/1973), the inventor of the IQ test, however, was a radical proponent of the idea that intelligence can be developed. He believed that children's most basic capacity to learn could be transformed through education, and he devoted much of his career to designing educational programs that might do that. Today, more and more psychologists are taking the view that intelligence or important components of it can be developed through motivation and learning (Brown and Campione, 1996; Perkins, 1995; Resnick, 1983; Sternberg, 1985). My work does not directly address the question of the true nature of intelligence, but it does show the critical importance of what people believe about intelligence. Let's now look at the motivational worlds created by the two different beliefs.

THE BELIEF IN FIXED INTELLIGENCE

What Is the Student's Goal?

When students believe that their intelligence is fixed what is it they want most to accomplish through their academic work? The answer is they want to look smart. Since intelligence is such a deeply valued commodity and they only have a fixed amount of it, they want to feel as though they have the right amount. In many studies with grade school, junior high school, and college students, we give students a choice between a challenging task where they can learn important new things and a "safer" task where they can look smart. Most students with the fixed view take the task that will make them look smart (Dweck and Leggett, 1988; Stone and Dweck,

1998). This means that rather than risk making errors, they will sacrifice valuable learning opportunities.

A recent study shows exactly how self-defeating this can be. At the University of Hong Kong (the premier institution of higher learning in Hong Kong), all classes, class assignments, and exams are in English. But not all students come to the university knowing much English. In this study (Hong, Chiu, Dweck, Lin and Wan, 1999), we assessed new students' theories about their intelligence and we obtained their scores on their English proficiency exams. We then asked them if they would be willing to take a remedial English course if the faculty offered it. Students who had low English proficiency and believed in malleable intelligence said yes, but students with low English proficiency and a fixed view of intelligence did not. They were not willing to expose their ignorance or risk errors—even though, by not doing so, they were putting their academic career in jeopardy.

What Does Failure or Difficulty Mean?

You might think that students who believe in fixed intelligence would form an opinion of their intelligence and stick to it, but this isn't the case. Why not? Because, although they believe intelligence is fixed, intelligence is an invisible, internal thing that they can't really observe directly—so they just have to guess its level from their performance. This means that one day students may think their fixed ability is high because they've done well, but the next day think it's low because they haven't.

We have found over and over that students who believe in fixed intelligence see academic setbacks as meaning something very negative about their intellectual abilities (Dweck and Sorich, 1999; Henderson and Dweck, 1990; Mueller and Dweck, 1998; Stone and Dweck, 1998; cf. Grant-Pillow and Dweck, 2003). This is even true of bright students at top schools.

In one study (Dweck and Sorich, 1999), we asked junior high school students to imagine that they really liked a new class they were taking in school. They studied for the first test, but did really poorly. What would they feel and what would they think? They told us they would feel stupid and would think, "I'm just not good at this subject" and "I wasn't smart enough." One test had the power to define them.

What would they do? Work harder? Guess again.

What Do They Believe About Effort?

Other students believe that effort can compensate for lower ability, that you can get to the same place by working that much harder—but not these students. They tell us that if you don't have ability, forget it. Specifically, they agree that: "If you're not good at a subject, working hard won't make you good at it" and "It doesn't matter how hard you work—if you're smart you'll do well; if you're not smart, you won't."

So what *would* they do after doing poorly on that test? Compared with students with the malleable view, the students with a fixed view of intelligence agree more with the following: “I would spend *less* time on the subject from now on,” and “I would try to cheat on the next test.” If effort doesn’t work, these are, sadly, the options they see for themselves.

I believe there is no more damaging view for students than the belief that effort is unnecessary (if you’re smart) and ineffective (if you’re not).

What Happens to Performance?

The need to prove your intelligence can be highly motivating when things are going well, but it does not serve students well when the going gets tougher. To examine this, we have done several large studies of students making the transition to junior high school (Dweck and Sorich, 1999; Henderson and Dweck, 1990). This is when students leave the cocoon of grade school in which teachers have time to be more nurturant, the work is more individualized, and the grading tends to be more generous. Suddenly, students find themselves in a new, more impersonal world with harder work and more stringent grading. This is a particular threat to students with the fixed view, whose intelligence is now on line.

In each of our studies, we have found that this is a time when their grades and achievement test scores suffer compared with those of their classmates who hold the more malleable view. Regardless of their past achievement, students with the fixed view are more likely to show lower academic performance. Some students who were among the highest achievers before are now in trouble.

Now let’s look now at the alternative.

THE BELIEF IN MALLEABLE INTELLIGENCE

What Is Their Goal?

When students believe their intelligence is a potential that they can develop, they focus—not so much on looking smart—but on challenges and learning. When we offer *them* a choice of tasks, they reject the task that would simply make them look smart, in favor of the task that allows them to learn something new, even with a risk of errors.

They agree with statements like these: “It is much more important for me to learn things in my classes than it is to get the best grades,” and “I like schoolwork I can learn from even if I make a lot of mistakes.” For these students, the name of the game is not the quick fix of outdoing others, but rather personal mastery over time: “I feel successful when I improve in school even if other students get a higher score than me.”

What Does Failure or Difficulty Mean?

It sends a message about your effort or strategy, not your fixed ability. Mistakes are simply a natural part of learning, and something that give you information about what to do next. Failure, while never a welcome event, is also signal to do something. When these students get a disappointing grade, they tell us they'd get information about what went wrong, engage in remedial work, and study more the next time (Dweck and Sorich, 1999; Grant-Pillow and Dweck, 2003; Hong et al., 1999). In other words, they take the bull by the horns and work toward improvement in the future.

What Does Effort Mean?

Everything. For these students, effort is what powers their ability and allows them to use it to the fullest. Even geniuses, they believe, have to work hard for their accomplishments. In this, they are in sync with Thomas Edison and his claim of 99 percent perspiration. They also believe that even if you're not so good at something, effort will certainly help you achieve, for effort is the way to overcome setbacks. In short, they agree: "The harder your work at something, the better you will be at it" (Dweck and Sorich, 1999).

What Happens to Performance?

In line with their emphasis on challenge, effort, and learning, these students are able to do well as they make difficult educational transitions. As I've reported, they outshine their classmates with the fixed view in grades and achievement test scores as they confront the challenges of a new school (Dweck and Sorich, 1999; Henderson and Dweck, 1990). Even some students who had not done that well before in school blossom at this time (Henderson and Dweck, 1990).

CAN THEORIES OF INTELLIGENCE BE CHANGED?

Yes, they can. Even though when people's theories are left alone, they tend to be fairly stable, people can be taught a different view.

In a number of experiments, psychologists have tested the effects of orienting students toward a malleable view of ability (by telling them that the ability required by the task could be learned over time with practice or effort) versus a fixed view of ability (by telling them that the ability is inborn, or is one that you either have or don't have) (Aronson, 1998; Jourden, Bandura and Banfield, 1991; Tabernero and Wood, 1999; Wood and Bandura, 1989). These studies have found that when indi-

viduals are given the malleable view, they choose more challenging goals for themselves, they maintain confidence and high effective persistence in the face of setbacks, and they end up outperforming those who are given the fixed view. What's also interesting is that the students given the malleable view maintain their interest in the activity even when they're experiencing difficulty.

In a fascinating study designed to test the effects of a self-theory intervention, Joshua Aronson, Carrie Fried, and Catherine Good (2002) taught college students a malleable view of their intelligence and looked at the impact of this on their actual engagement and achievement in school. Students who were taught this theory, especially the minority students, showed greater engagement with their studies and higher grade-point averages than groups of comparable students who were not taught this theory. This study shows what a profound effect a short belief-changing experience can have on a student's academic life.

Aronson and Good (2002) also performed a self-theory intervention with minority students in junior high school as part of computer skills class. For the students in the experimental group, the mentors conveyed the view that intelligence is expandable, and helped each student design a Web page that advocated this view. At the end of the year, they compared the performance of the experimental and control groups on statewide standardized achievement tests. The results showed that the students in the malleable theory intervention earned higher achievement test scores in both math and reading than did students in the control group. Although the malleable manipulation helped all students, it was particularly beneficial to females in math. In the malleable condition, the gender gap in math, evident in the control group, disappeared.

Recently, we completed a theory-changing intervention with at-risk junior high school students who had been showing sharp declines in achievement (Blackwell, Dweck and Trzesniewski, 2003). As in the Aronson and Good study, students in the experimental group (who received instruction in the theory of malleable ability) and students in the control group both received training in important academic skills and knowledge. However, only students in the experimental group were taught the idea that learning changes the brain and makes you smarter. By the end of the semester, students in the experimental group earned significantly higher math grades than those in the control group and, according to their teachers (who did not know which group students were in), showed marked changes in academic motivation. The malleable theory appeared to energize students to use the new skills they had learned.

Most academic interventions simply try to strengthen the skills that vulnerable students are thought to lack, for example, by teaching them study skills or by tutoring them in the subjects that present difficulty. Yet this does not appear to be enough. In all of the three studies just described, the students in the control group either already had equivalent skills or were given all of the same skill-boosting programs as the experimental group. In each case, only those who experienced the belief-changing intervention showed changes in motivation, put their skills to work for them, and displayed gains in achievement.

Aside from direct interventions, there are also some common practices that can—inadvertently—alter students' theories about their intelligence.

THE EFFECTS OF PRAISE

A few years ago, Melissa Kamins, Claudia Mueller, and I began to wonder if some very common and very well-meant practices might be having unwanted effects on students. We started thinking about how students with the fixed view of intelligence were so fixated on their intelligence and so concerned with how their performance measures them. Well, we thought, when you praise students' intelligence after a job well done, isn't that telling them that intelligence is what it's all about and isn't it telling them that their intelligence can be measured directly from their performance?

Now, of course, this isn't what people mean to do when they praise intelligence. They mean to boost students' confidence and motivate them to do well in the future. In fact, in a survey of parents that we conducted, more than 80 percent of parents agreed that it was *necessary* to praise children's ability to make them feel good about themselves. However, to see what intelligence praise *really* does, we conducted a series of studies. To foreshadow our findings, I will tell you that the power of intelligence praise was astounding to us.

In six studies (Mueller and Dweck, 1998; see also Kamins and Dweck, 1999, for studies with younger children), we gave 5th-grade children interesting puzzlelike problems to solve. These problems were part of a popular nonverbal IQ test. The first set of problems they worked on were challenging but well within their range, and virtually all children did really well. After this success, children received one of three forms of praise. One-third of the children were given intelligence praise: "You must be smart at these problems." One-third were given effort praise: "You must have worked hard at these problems." And one-third of the children were simply told that they had done really well, but were not praised for their ability or their effort. Remember, all three groups of students were really the same when they came into the study. The only thing that differed was one sentence of the praise feedback they received. Next, they all received far more difficult problems, on which they did more poorly (so we could assess the impact of this difficulty on their subsequent motivation and performance). Finally, all children received another set of the easier (but challenging) problems.

First, we found that students who were given intelligence praise actually now bought into the fixed view of intelligence more than the students who were given the effort praise. Thus, the intelligence praise per se seemed to imply that the adult was judging some deep-seated ability that dwelt within them, and the effort praise seemed to imply that skills are more acquirable and can be expanded through effort.

What goals did students want to pursue following the initial praise? The majority of the intelligence-praised students chose a task that would allow them to look

smart and rejected a challenging task that would allow them to learn a lot but wouldn't necessarily make them look good. The effort-praised students did completely the opposite: as many as 80 to 90 percent of them preferred the task that would allow them to learn a lot and rejected the task that would just make them look smart. So, intelligence praise, rather than making students eager for challenge and learning, did just the opposite. It was effort praise that made students eager to jump right in and learn.

What did failure mean to them? If praising students' intelligence did in fact teach them to measure themselves from their performance, then they should measure themselves from their poorer performance on the second set of problems—and that's what they did. When asked to rate different explanations for why they had trouble with those problems, intelligence-praised students agreed strongly with: "I'm not good enough at the problems," and "I'm not smart enough." What the intelligence praise gave them, one experience with difficulty took away. The effort-praised students hardly blamed their ability at all. Instead they agreed strongly with: "I didn't work hard enough," something they could easily remedy.

How did the difficulty affect children's enjoyment of the task? We assessed this by asking students how much fun they thought the problems were and how much they liked working on them. When students answered these questions right after the praised success, students from all groups thought the task was great fun. And when the effort-praised students were asked these questions after the hard problems, impressively, the difficulty did not change their enjoyment one bit; they really seemed engaged and challenged. But the enjoyment of the intelligence-praised students declined significantly after the difficulty (as did their desire to take the problems home to practice). In short, effort praise, but not intelligence praise, allowed students to maintain their interest and commitment.

What happened to performance? In four studies, we tracked students' performance over the three sets of problems, and looked at what happened from the first set (where all three groups had done equally well) to the third set (that was equivalent to the first set in difficulty, but came after the hard second set). The effort-praised students did the best of the three groups on the final set, and they improved significantly from the first set to the third. This means that their continued involvement and effort paid off. They actually became better ("smarter") at the problems.

In contrast, the intelligence-praised students did the worst of the three groups on the last set of problems, and *declined* significantly from the first to the third set. So, not only does this mind-set lead to self-denigration and loss of enjoyment in the face of difficulty, but it also leads to impaired performance.

This is not to say that students didn't enjoy the intelligence praise. To the contrary. When students received the intelligence praise, they often displayed a proud, satisfied smile that they didn't show in the other conditions. However, that smile of satisfaction was short-lived, as a host of concerns soon overwhelmed them. In

contrast, the effort praise, although perhaps not as thrilling initially, had a host of beneficial effects. By the way, we meant the effort praise to stand for a category of praise—process praise—where the emphasis is on what students put into their work to achieve an admirable result. The praise could as easily refer to their strategies and the like, not just sheer effort.

FEEDBACK IN THE REAL WORLD

How might these trait-versus-process messages be communicated to kids in the real world? Chauncy Lennon and I (Dweck and Lennon, 2001) began thinking seriously about this issue when he called to my attention a very strange finding from a large-scale study of thousands of students across the country: The more time parents spent with their children on homework, the less well the students did! Now, of course, it might be the case that parents felt they had to spend more time with poorer students. But it also could be that spending a lot of time with students on their homework sends them the message that they're not capable. So, we started thinking about all the good things parents do that can send their kids a trait message—or that can send their kids a process message—and we developed a questionnaire to ask beginning junior high school students about this.

We developed a series of scenarios in which we asked students to imagine that their parents did something. Here is an example: "Imagine that your parents offer to help you with your schoolwork. Why would they do this?" We then offered them a series of four reasons to rate. Each reason represented a trait message ("They are worried that I'm not smart enough to figure it out on my own") or a process message ("They want to make sure I learn as much as I can from my schoolwork"). The trait messages focused on judgments of smartness-dumbness or goodness-badness, whereas the process messages focused on learning, challenge, effort, strategies, and understanding things. Here's another example.

"Suppose that your parents are very excited when you bring home some good grades. Why would they be this way?" Trait message: "They think it means I'm smart in school." Process message: "They think I worked hard to get good grades." We included positive trait messages like this so that it wouldn't just be that the trait-focused messages were ones that were more negative.

We then looked at what these trait-versus-process messages predicted. First, the trait message predicted a more fixed theory of intelligence, whereas the process message predicted a more malleable theory. The messages also predicted students' effort beliefs, their explanations for failure, and their grades across their transition to junior high school.

Of course, we don't know from these findings whether there are real differences in parents' messages that are causing these differences or whether students who already have a fixed theory just interpret their parents' practices differently from students who have a malleable theory. Our findings from the studies on intelli-

gence-versus-effort praise show that adults' practices *can* have a direct effect on children's beliefs and motivation. However, both possibilities would be interesting and we are looking at this question in our current studies (Pomerantz and Dweck, 2003).

(MORE) IMPLICATIONS

Our findings on trait-versus-process feedback tell a consistent story. They show that practices focussing students on judgments of their intelligence can lead to a belief in fixed intelligence with all of its vulnerabilities. On the other hand, practices that focus students on such things as effort, challenge, or strategies can lead to a belief in malleable intelligence with all of its benefits. Let's look at some of the implications of these findings.

One thing that excites me about these findings is that the process message is pretty easy to incorporate into existing practices. A teacher, for example, may be very structured or unstructured, very autocratic or democratic, very warm or formal—it doesn't matter. A process message can fit into any of these styles.

The same thing is true for parents. In some cultures, the parents rule the roost and children must simply comply. In other cultures, there is a higher premium on understanding the child's point of view and in having a more equal give-and-take between parent and child. Still, a process message can be integrated into either style without asking parents to develop a whole new philosophy of child-rearing that may or may not fit with their culture.

Learning Is Nice, but Aren't Performance Goals Also Important?

I've talked about how students with the malleable theory of intelligence value learning something new (a learning goal) over validating their intelligence through their performance (a performance goal). But given our society, are performance goals also important? Yes, they are.

To my mind, it's the balance that counts—keeping a balance between valuing learning and performance. Let's face it: Grades often matter a lot, and many students who want to go on to top schools need good grades. Problems arise when students come to care so much about their performance that they sacrifice important learning opportunities and limit their intellectual growth—as they do with a fixed theory of intelligence.

Problems also arise when students equate their grades with their intelligence or their worth. This can be very damaging, for when they hit difficulty, they may quickly feel inadequate, become discouraged, and lose their ability or their desire to perform well in that area.

For me, the best mix is a combination of a) valuing learning and challenge, and b) valuing grades but seeing them as merely an index of your current performance, not a sign of your intelligence or worth (see Grant-Pillow and Dweck, 2003).

Students who are taught that their performance simply measures their current skills can still relish learning and challenges, for mistakes and setbacks would not be undermining them. By the way, this stance characterizes many top athletes. They are *very* outcome-oriented during a game or match, but they do not see a negative outcome as reflecting their underlying skills or potential to learn. Moreover, between games they are very learning-oriented. They review tapes of their past game, they try to learn from their mistakes, they talk to their coaches about how to improve, and they work ceaselessly on new skills.

What About “Gifted” Labels and Programs?

Calling a student gifted can be just like intelligence praise. This means that labeling kids as gifted can sometimes do more harm than good by feeding into a fixed theory of intelligence. The label “gifted” implies that students have received some magical quality (the gift) that makes them special and more worthy than others. Some students are in danger of getting hung up on this label. They may become so concerned with deserving the label and so worried about losing it—that is, they may become so concerned with bolstering their fixed, superior intelligence—that they may lose their love of challenge and learning. They may begin to prefer only things they can do easily and perfectly, thus limiting their intellectual growth.

In line with what I discussed earlier, psychologists who study creative geniuses point out that the single most important factor in creative achievement is willingness to put in tremendous amounts of effort and to sustain this effort in the face of obstacles. It would be a pity if by labeling students as gifted, we limited their creative contributions.

However, we can prevent this by making clear to students that “gifted” simply means that if they work hard and keep on learning and stretching themselves, they will be capable of noteworthy accomplishments. Of course, that is true of many people, not just those considered gifted.

What About Girls?

Girls, especially bright girls, have traditionally underestimated themselves and shied away from challenges. Don’t they *need* a message that they’re smart?

As I have shown, the way to motivate students and to give them more lasting motivation and confidence is not by telling them they’re smart, but by focusing them on the processes that create achievement. In fact, my great fear is that in our zeal to bolster the confidence of girls (and minority students as well), we have lav-

ished intelligence praise upon them, thereby making them perhaps even more vulnerable than they were before.

PYGMALION AND THE MALLEABLE THEORY

The idea of beliefs affecting behavior was dramatically demonstrated in the original “Pygmalion in the Classroom” studies by Rosenthal and Jacobson (1968). It was *teachers’* beliefs and *teachers’* behavior that were influenced, but the impact was on students’ achievement.

At the beginning of a school year, teachers were told that some students in their classes had the potential to blossom intellectually. These students had in fact been randomly selected, but by the end of the year, especially in the younger grades, many of these students actually showed marked gains in achievement.

This study is often interpreted to mean that when teachers think students are smart, they treat them differently. But teachers were not told that the students were simply smart. They were given a malleable theory of those students’ intelligence, and it may well be the malleable theory of intelligence that produced the results. This would mean that it is not only students’ theories of intelligence that matter, but teachers’, too (see Dweck, 2001).

CONCLUSION

I have shown that self-theories about intelligence can play a central role in motivation and achievement by orienting individuals toward different goals, different interpretations of outcomes, different views of effort, and different ways of coping with difficulty. I have also shown how these theories can be shaped by experience, and how interventions that teach a malleable theory of intelligence can boost motivation and achievement. Just as social psychologists have long known, changing a key belief such as this can have a surprisingly large impact in a surprisingly short time. The task ahead is to identify other key beliefs that affect motivation and effective functioning in other areas of people’s lives.

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