

2011 Award for Distinguished Scientific Contributions

Mindsets and Human Nature: Promoting Change in the Middle East, the Schoolyard, the Racial Divide, and Willpower

Carol S. Dweck
Stanford University

DOI: 10.1037/a0029783

Debates about human nature often revolve around what is built in. However, the hallmark of human nature is how much of a person's identity is not built in; rather, it is humans' great capacity to adapt, change, and grow. This nature versus nurture debate matters—not only to students of human nature—but to everyone. It matters whether people believe that their core qualities are fixed by nature (an entity theory, or fixed mindset) or whether they believe that their qualities can be developed (an incremental theory, or growth mindset). In this article, I show that an emphasis on growth not only increases intellectual achievement but can also advance conflict resolution between long-standing adversaries, decrease even chronic aggression, foster cross-race relations, and enhance willpower. I close by returning to human nature and considering how it is best conceptualized and studied.

Keywords: implicit theories, mindsets, human nature, conflict resolution, prejudice

Debates about human nature often revolve around what is built in. Are people born to be aggressive? Is antipathy toward the outgroup a part of human nature? Is willpower severely limited by biology?

To me, however, the hallmark of human nature is how much of who we are—and who we become—is not built in. The hallmark of human nature is each person's great capacity to adapt, to change, and to grow. In fact, perhaps what is built in is this capacity to learn and change according to the world you find yourself in.

This would make good sense, for it gives people the flexibility to mirror different possible worlds. Indeed, it has been found, as John Bowlby (1982/1969) claimed, that 1-year-old infants have formed mental models of their social worlds that tell them what to expect from others and how to behave with others (Johnson, Dweck, & Chen, 2007; Johnson et al., 2010). Also reflecting infants' keen sensitivity to information from their social worlds, developmental psychologists Csibra and Gergely (2009) have found in their ingenious studies that infants are exquisitely responsive to pedagogical cues from adults that signal that

something is about to be taught. The cue could be a subtle look or tone of voice, but the infant immediately orients to learn.

Moreover, learning can alter some of people's most basic qualities, even in adulthood. Intriguing preliminary evidence hints that training working memory may raise performance on tests of fluid intelligence, the kind of intelligence that allows people to use knowledge and skills to solve new problems (Jaeggi, Buschkuhl, Jonides, & Perig, 2008; see also Jaeggi, Buschkuhl, Jonides, & Shah, 2011). Personality traits that are often assumed to be stable tend to show clear, lasting, and mostly positive changes in adulthood as people assume new social roles; individuals can also show marked change in these trait as a function of their personal life experiences (Roberts & Mroczek, 2008). And work in neuroscience increasingly attests to the remarkable plasticity of the brain well into adulthood (for an overview, see Doidge, 2007).

This nature versus nurture debate matters, not only to scientists or students of human nature but to everyone. That is, it matters what people's mindsets are. It matters whether people believe that their core qualities are built in and fixed by nature (an *entity theory* or *fixed mindset*) or whether they believe that their qualities can be developed through nurture and their own persistent efforts (an *incremental theory* or *growth mindset*). It matters a great deal.

These mindsets have been shown to make a difference for success in academics (e.g., Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007; Cury, Da Fonseca, Zahn, & Elliot, 2008; Good, Aronson, & Inzlicht, 2003; Good, Rattan, & Dweck, 2012; Stipek & Gralinski, 1996), in social relationships for adults and children (e.g., Beer, 2002; Erdley, Cain, Loomis, Dumas-Hines, & Dweck, 1997; Finkel, Burnette, & Scissors, 2007; Kamrath & Dweck, 2006; Knee, 1998; Levy & Dweck, 1999; Ruvalo & Rotondo, 1998), in the workplace (e.g., Heslin & Vanderwall, 2008; Kray & Haselhuhn, 2007; Taberner & Wood, 1999), and in emotional and physical health (e.g., Biddle, Wang, Chatzisarantis, & Spray, 2003; Burnette, 2010; Burnette & Finkel, 2012; Kasimatis, Miller, & Marcussen, 1996; Tamir, John, Srivastava, & Gross, 2007).

If so much of who a person is, is about the mindsets or beliefs that person holds, that is good news, because beliefs

Editor's Note. Carol S. Dweck received the Award for Distinguished Scientific Contributions in 2011. Award winners are invited to deliver an award address at the APA's annual convention. This article is based on the award address presented at the 119th annual meeting, held August 4–7, 2011, in Washington, DC. Articles based on award addresses are reviewed, but they differ from unsolicited articles in that they are expressions of the winners' reflections on their work and their views of the field.

Author's Note. Correspondence concerning this article should be addressed to Carol S. Dweck, Department of Psychology, Stanford University, Jordan Hall, Stanford, CA 94305. E-mail: dweck@stanford.edu

can be changed. In this article, I review new work showing that changing people's mindsets can pave the way for conflict resolution between long-standing adversaries and fostering more positive attitudes between Israelis and Palestinians, as well as greater willingness to make major compromises for the sake of peace. Changing mindsets can decrease chronic adolescent aggression, a quality that is often viewed as fixed by this age. Changing mindsets can substantially boost people's desire for and comfort in cross-race interactions. And they can significantly enhance people's willpower.

If these very basic qualities can be altered by shifting people's beliefs, it reveals a good deal about how people work. Thus, at the end, I return to the issue of human nature, I underscore the dynamic and malleable character of human personality, and I point to its implications for the task of psychologists.

What Are Mindsets?

Mindsets (or implicit theories), as psychologists have studied them, are people's lay beliefs about the nature of human attributes, such as intelligence or personality. Some people hold a fixed mindset (or an entity theory) and believe that human attributes are simply fixed traits. For example, they might believe that each person has a fixed amount of intelligence and cannot change that or that each person has a certain personality or moral character and cannot do anything much to alter it.

In contrast, other people hold a growth mindset (or an incremental theory). For example, they may believe that all people, no matter who they are, can become substantially more intelligent, say, through their effort and education, or that all people can take steps to develop their personality or moral character over time.

Much research has shown that when people hold a fixed mindset about their own traits, such as their intelligence, they tend to avoid challenges for fear of showing themselves to be unintelligent (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Robins & Pals, 2001). They also tend to show less resilience in the face of setbacks; that is, they interpret the setbacks as implying a lack of ability and become discouraged or defensive (Blackwell et al., 2007; Hong, Chiu, Dweck, Lin, & Wan, 1999; Nussbaum & Dweck, 2008; Robins & Pals, 2001). In contrast, those who believe their qualities can be developed tend to seek challenging learning opportunities and show resilience in the face of setbacks—setbacks are not indictments of the self but, rather, are integral parts of learning. Research has also shown that teaching a growth mindset to students can significantly boost their motivation and achievement during challenging academic transitions (Aronson, Fried, & Good, 2002; Blackwell et al., 2007; Good et al., 2003) and that a growth mindset can help prevent negative stereotypes from undermining achievement (Aronson et al., 2002; Good et al., 2012).

People may also hold a fixed versus growth mindset about others. When they hold a fixed mindset, they tend to form rapid trait-based judgments of others, both individuals (Chiu, Hong, & Dweck, 1997; Erdley & Dweck, 1993; Molden, Plaks, & Dweck, 2006) and groups (Levy, Stroessner, & Dweck, 1998; Levy & Dweck, 1999; Rydell, Hugenberg, Ray, & Mackie, 2007). Because they believe traits are fixed, once those with a fixed mindset have labeled an individual or stereotyped a group, they tend to reject information that runs counter to their label or stereotype (Erdley & Dweck, 1993; Plaks, Stroessner, Dweck, & Sherman, 2001). In contrast, those who hold a growth mindset tend to understand people's behavior more in terms of situations and psychological processes (e.g., needs, beliefs, emotions, goals) rather than in terms of traits (Hong, 1994; Levy & Dweck, 1999; Molden, Plaks, & Dweck, 2006; see also Chiu et al., 1997). They are thus less likely than those with a fixed mindset to affix labels to a person or group and more likely to update their impressions in the face of new information.

This brief summary provides the background for new research, which probes even further into the role of mindsets in seemingly deep-seated attitudes and behaviors. Let's begin by examining the Israeli–Palestinian conflict and the role that mindsets can play in shaping the attitudes of the two groups toward each other and toward peace.

Israelis and Palestinians: Attitudes Toward Each Other and Toward Peace

The Israeli–Palestinian conflict is perhaps the defining conflict of the current era and has joined the category of conflicts that are considered intractable (see Vallacher, Coleman, Nowak, & Bui-Wrzosinska, 2010). Thus, anything that can affect the attitudes of the parties in this conflict and their willingness to accept compromises for the sake of peace is potentially important. When he was a postdoctoral fellow at Stanford, Eran Halperin began to wonder whether people's mindsets, particularly their mindsets about groups, might affect those attitudes. Halperin and his colleagues (Halperin, Russell, Trzesniewski, Gross, & Dweck, 2011) reasoned that holding the general belief that groups have fixed traits—for example, that groups that are evil or aggressive will always be evil or aggressive—would promote and perpetuate hatred toward particular groups, especially groups with which one is in conflict.

Within a week, we had the opportunity to test this prediction on a representative national sample of 500 Jewish Israelis, who were interviewed in their native language of Hebrew or Russian by a trained interviewer. The measures of interest were mindsets about groups, attitudes toward Palestinians, and willingness to make compromises for peace, and these measures were widely separated and embedded within an extensive set of questions on other topics. We assessed people's *implicit theories about groups* by asking them how much they agreed with statements such as “Groups can do

things differently, but the important parts of who they are can't really be changed"; "Groups that are characterized by violent tendencies will never change their ways"; and "Every group or nation has basic moral values and beliefs that can't be changed significantly." *Attitudes toward Palestinians* were measured by asking people to tell us how much they agreed with statements such as "All Palestinians are evil by nature" or "Palestinians should never be trusted." And to tap *willingness to compromise*, we assessed people's level of support for major compromises that Israel could make in an attempt to bring about peace, such as "Support for territorial compromises with the Palestinians based on the 1967 borders" and "Support for shared sovereignty over the holy places in Jerusalem."

What happened? In line with our predictions, we found that the more that people held a general fixed mindset about groups, the more they held negative attitudes toward Palestinians. This, in turn, predicted less support for peace-related compromises. However, we still did not know whether people's fixed mindsets were the cause of the more negative attitudes toward Palestinians. Therefore, next on the agenda was an experiment in which we would manipulate people's theories about groups.

To do this, Halperin wrote two articles. They were identical except for key words or phrases, and both articles described research and case studies on the topic of aggressive tendencies in groups. However, one article depicted groups as being capable of change, for example, with changes in context or leadership, whereas the other depicted groups as being unlikely to change. Neither article mentioned Palestinians or Arab-Israeli relations.

We then obtained a sample of Jewish Israelis that spanned the political spectrum and told them they were participating in two separate studies. The first study, on reading comprehension, contained the articles designed to manipulate people's implicit theories. The second study was a survey about Israeli society, a 75-item questionnaire in which our dependent measures were embedded, well separated from the article and from each other. When later debriefed, no one made any connection between the articles and the subsequent measures. Nonetheless, we found that simply reading an article that depicted groups in general as malleable—never mentioning Palestinians—led to more favorable attitudes toward Palestinians than did reading an article that depicted groups as having a more fixed nature. Not only that, but these more favorable attitudes went on to predict substantially greater willingness to make major compromises for peace. So now we knew that implicit theories could play a causal role in molding attitudes, but we did not yet know whether this was true for people on the other side of the conflict.

Jewish Israelis have tended to be the more powerful group in the conflict, so maybe their attitudes are easier to change than those of groups who have opposed them. What about the attitudes of Palestinian Israelis, who are citizens of Israel but

a minority group (19% of the population) that has had to fight for its civil rights? Would their attitudes change if they were primed with our implicit theory articles? All materials were translated into Arabic and were altered to make them appropriate for this group. For example, the attitude items now asked to what extent participants thought that "Jews are essentially 'evil,'" "Israeli Jews are not trustworthy," or "Israeli Jews are racist and Arab haters." Willingness to compromise items included "Do you think that, in the event that Israel ceases settlement building, the Arab/Palestinian citizens of Israel should make significant steps such as pledging collective loyalty to the State of Israel?" Despite the differences between the Jewish and the Palestinian Israelis, we again saw a significant impact on people's attitudes. Those who read the growth mindset article, compared with those who had read the fixed mindset article, had more favorable attitudes toward Israelis and were more willing to endorse major compromises. This was true even for the most hawkish participants.

However, we thought the true test of the power of our hypothesis lay with Palestinians outside of Israel. Perhaps Palestinian citizens of Israel have learned to coexist with Jewish Israelis and even have a stake in the continued existence of Israel. But what about Palestinians in the West Bank, who have no official state, who often belong to groups like Hamas and Fatah, and who are sworn enemies of Israel? To answer this question, we recruited a sample of Palestinians from the West Bank who lived in Ramallah, the administrative capital of the Palestinian National Authority. Despite the fact that this population often expresses virulent hatred toward Israeli Jews, those who read the growth mindset article, compared with those who had read the fixed mindset article, had significantly more favorable attitudes toward Israeli Jews and showed greater willingness to make major compromises for the sake of peace. But there is more.

We had another measure in this study. We asked people how willing they would be to meet with Jewish Israelis to hear their point of view. Would their more favorable attitudes turn into a willingness to personally perform a conciliatory behavior? Yes. Those who read the incremental article were far more likely to agree to interact with a Jewish Israeli if the opportunity arose. In fact, they were about 70% more likely. What is more, attitude research shows that expressing a willingness to interact is a strong and consistent predictor of actual interaction.

In this research, then, we affected people's attitudes toward a longstanding and hated outgroup without ever mentioning that outgroup—that is, without creating empathy for or understanding of the outgroup and without creating actual or imagined interaction with that group. By instilling the idea that groups are not simply evil or aggressive forever regardless of their circumstances or leadership, by fostering the belief that groups are capable of change, we were able to make a difference in attitudes, willingness to make major

compromises, and willingness to interact. Although conflict in the Middle East will be around for a long time to come, it is important to know that the negative attitudes are not frozen.

So much more needs to be learned. Can a growth mindset be taught in a way that endures in the real world, withstanding constant bombardment with negative images of and messages about the other group? Might learning a growth mindset lead to more enduring attitude change than fostering a positive attitude in other ways? Will learning a growth mindset lead to actual behavior change—actual reaching across group boundaries, actual support for peace initiatives—in the real world? These are questions we are eager to address and have begun to tackle in our new research.

Bullies and Victims: Aggression

The Middle East does not have a monopoly on hatred and aggression. Tensions run high in many high schools. In fact, a large percentage of high schoolers at almost all levels of popularity report being bullied or ostracized by their peers (Crosnoe, 2011). In our studies, virtually all students can name times when they felt insulted, rejected, or excluded, but the key question is, When does this breed aggression and what can be done about it?

David Yeager began to take note of some intriguing facts. First, many interventions designed to reduce aggression are highly successful with preadolescents, but the same interventions often have a very limited impact on adolescents (Silvia et al., 2011). At the same time, adolescents are coming to see their peers more and more in terms of fixed traits, particularly with respect to aggression (Killen, Crystal, & Watanabe, 2002; Killen, Kelly, Richardson, & Jampol, 2010). Yeager asked, Could these two facts be connected? Could it be that adolescents' mindsets are breeding aggression and that interventions that neglect their changing mindsets are missing the mark?

The first step was to establish a connection between adolescents' mindsets and their desire for aggressive retaliation. Toward that end, Yeager developed a scale that tapped adolescents' mindsets about themselves and their peers: Did they believe that bullies and victims were kinds of people who could not change, that winners and losers were kinds of people who could not change? Such beliefs could appreciably heighten students' reactions to conflict if they see being bullied as meaning that the bully is a permanently bad person and that they themselves are permanent victims or losers. Yeager and his colleagues (Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011) administered this implicit theories scale to high school students in our first two studies. In a third study, instead of measuring students' existing mindsets, we primed a growth mindset for one group of high school students (via an article they read that described how people could change) and compared their reactions to peer conflicts with those of a control group that was not primed. In

each study, we measured adolescents' feelings about themselves and their peers after conflicts or after scenarios of bullying, and we assessed their desire for aggressive revenge (i.e., how much they felt like "hurting this person," "trying to get back at them in any way I could," "finding a way to punish this person," "dreaming about a way to give them what they deserve," "wishing that somebody would hurt them," and "imagining them getting hurt").

Over the three studies, with high school students from all over Finland (a country with high-profile school shootings) and with a diverse sample of high school students from the United States, we found, first, that a fixed mindset consistently and significantly predicted a heightened desire for aggressive retaliation and a heightened intention to engage in aggressive retaliation. This happened because students with a fixed mindset were more likely to harbor negative feelings about themselves (e.g., shame), to view their adversaries as bad people, and to express hatred toward them. The shame fueled the hatred and, together with the view of the other as evil, inflamed the desire for revenge.

Put another way, students who held more of a growth mindset or who were primed with a growth mindset responded to conflict or victimization with less hatred, less shame, and less desire to wreak vengeance on others. It is important to note that learning a growth mindset also increased the proportion of prosocial responses that adolescents endorsed, such as "forgiving them eventually," "helping them see that what they did was wrong," and "helping them act better in the future."

However, important questions remained. Would it be possible to instill a growth mindset in a way that would endure in the real world of adolescents? That is, could instilling a growth mindset reduce aggression in a lasting way, despite the fact that the adolescents continued to live in a world full of conflict? To address the lingering questions, Yeager designed an intervention to teach high school students a growth mindset and how to apply it to their peer conflicts (Yeager, Trzesniewski, & Dweck, in press). The sample was a challenging one. They were students attending a high school that had a relatively high incidence of aggression, with 40% of the students saying that they did not feel safe from threats at school. Even the school personnel tried to warn us against trying to change these students, telling us that it was too late for them and that we should spend our time on younger students. Clearly, the school personnel held a fixed mindset about their own students and their capacity for change.

Students were randomly assigned to one of three groups: a growth mindset group, a coping skills control group, and a no-treatment control group. Adolescents in the growth mindset group received a six-session intervention in which they learned about the brain; how people's thoughts and feelings, which control their behavior, live in the brain; and how, with learning, the brain can be changed. They learned that people do not do things because they are bad people but rather

because of the thoughts and feelings that live in their brains. Further, they learned that change was not easy or even likely, but it was always possible. Finally, they practiced applying growth mindset thinking to peer conflicts.

The coping skills control group was based on a popular curriculum widely used with high school students and very much like the curricula that have had wide success in reducing aggression in younger age groups. It taught students specific skills for coping with social adversity and it taught them about the importance of positive thinking. The content of the sessions, the activities students performed, and the peer conflicts they addressed were parallel in the two treatment groups.

One month after the end of the intervention, all three groups were tested for aggressive retaliation. Yeager et al. (in press) did this by giving students an experience of temporary rejection, then giving them an opportunity to retaliate. Students played a game of Cyberball, an online game of catch with two peers (Williams, 2009). In this game, the two peers throw the ball twice to the participant at the beginning but then never throw it to him or her again. Later, the adolescents who experienced the rejection had the chance to assign hot sauce to one of the peers who excluded them, knowing that the peer could not abide spicy food. (Of course, no one really ate hot sauce and all students were extensively debriefed at the end of the session.) Students in the growth mindset group assigned 40% less hot sauce than did those in the other two groups. This finding applied across the board—the effect was equally strong for students who had been rated as aggressive by their peers and those who had not, and it was equally strong for students who were frequent victims of peer aggression and those who were not.

Yeager also gave students the chance to send a note along with the hot sauce. Would they rub it in or would they write something conciliatory or prosocial? Those in the growth mindset group wrote approximately three times as many prosocial notes as did those in the other two groups. This means that they were not simply less aggressive but that they also had positive feelings, such as concern and compassion, for someone who had excluded them. Students in the other groups literally rubbed it in, some of them actually smearing hot sauce on their gloating note.

At the end of the school year, teachers were asked to nominate students who had shown a reduction in aggression and an increase in prosocial behavior (e.g., being kind or friendly). Those students in the growth mindset group, particularly those who had reported being victimized, received significantly more nominations than did those in the other two groups. That is, they showed a clear reduction in aggression and acting out in the classroom as a consequence of the intervention, which was accompanied by greater consideration for others.

Did the coping skill intervention help the students at all? Yes, both the growth mindset and the coping skills groups

reported a reduction in depressive symptoms compared with the no-treatment group. Learning specific coping skills for dealing with social adversity and learning about positive thinking helped the recipients of the coping skills intervention feel better, but it did not leave them better able to cope with social conflict or classroom stress in a nonaggressive way.

In short, a growth mindset intervention yielded consistent and relatively enduring changes in adolescents' propensity for aggressive behavior. An excellent intervention that taught skills but not mindsets did not. These findings lend support to the idea that aggression is not fixed but that the means of altering it might change as people grow older and develop new beliefs that underlie and perpetuate aggression.

Mindset and Cross-Race Relations

The area of cross race relations has been dominated by one idea: that negative attitudes tell the whole story of current relations between Blacks and Whites. This story implies that if prejudice were eradicated, race relations would readily flourish. New research shows that this may not be true.

Within a few weeks of each other, Priyanka Carr and Kristen Pauker both came to me with an idea. They both had the insight that it is not simply prejudice itself but also a person's theory about prejudice that will affect the desire for cross-race relationships and comfort in interracial interactions. Here is how it might work. In much of society, prejudice is taboo. If people believe that prejudice is a fixed trait, then acting in a prejudiced way or even thinking a prejudiced thought could make them feel that they are racists. They may come to believe that the surest way to avoid this is to avoid cross-race interactions or anything to do with race, for that matter. What happens if they find themselves in a cross-race interaction? Their concern about being or even feeling prejudiced could make the interaction tense and stilted.

And the interesting thing is that this would happen even for people who are low in prejudice. People who have a fixed mindset about prejudice, even when they are low in prejudice, may look prejudiced. That is, they may display the hallmarks of prejudiced behavior: an avoidance of interracial interactions and high discomfort and low apparent friendliness in those interactions. We call this "prejudice" without prejudice (Carr, Dweck, & Pauker, 2012).

Yet, if people believe that prejudice can be changed, that it can be reduced through learning, then confronting a prejudiced thought or action in themselves would not be so devastating. Moreover, contact with people of other races may be sought and capitalized on as a means of learning. Priyanka Carr vigorously pursued this idea with adults, and Kristen Pauker pursued it with children. Here, I focus on the former and on work that examined White individuals' mindsets about prejudice.

Once again, Carr began by measuring people's mindsets, in this case, by asking people to agree or disagree with

statements about prejudice: “People have a certain amount of prejudice and they can’t really change that” (a fixed mindset) or “No matter who somebody is they can always become a lot less prejudiced” (a growth mindset). In the initial studies, we found that completely independently of people’s level of explicit or implicit prejudice, those who believed that prejudice was fixed were remarkably averse to activities that involved race or diversity—even something as innocuous as reading facts about African American history. In another study, people anticipated an upcoming conversation with a Black or White person and were asked to arrange the seats for the conversation. Those with the fixed mindset placed the seats significantly farther apart. In this study, we also asked people to indicate how much time they would want to spend in the upcoming conversation if they had unlimited free time that day. When they were slated to interact with a White person, both those with fixed and growth mindsets said they would like to spend an average of about 20 min in the conversation. When they were slated to interact with a Black person, those with the growth mindset offered 30 min, but those with the fixed mindset offered 5 min (and many did not offer any time at all).

Also as before, Carr created articles that oriented people toward one mindset or the other. For example, the growth mindset article told people that scientists were finding that prejudice is changeable and can be reduced. It related the story of a person whose prejudice had changed, and it described a long-term study showing that changes in prejudice over time were common. The belief that prejudice could be changed resulted immediately in a greater desire for cross-race interactions than did the belief that it was fixed. Most striking of all, in another study, some time after reading the articles, people had an in-person conversation with either another White person or a Black person. The participants were videotaped and the tapes were coded for indices of behavioral anxiety (e.g., eye contact, body rigidity, nervous laughter, and speech dysfluency) and for overall friendliness. Their physiological reactivity, as indexed by their heart rate, was also measured.

When people interacted with another White person, everyone was relatively relaxed and friendly. However, when they interacted with a Black person, every index of anxiety, as well as the measure of physiological reactivity, was significantly greater for those who were oriented toward a fixed mindset. Further, the rating of friendliness was significantly lower. This means that there have been serious obstacles to interracial interactions quite apart from prejudice itself and that even if prejudice were stamped out, these obstacles might remain. Extensive research attests to the malleability of prejudice (see Pettigrew & Tropp, 2006), and now it is clear how important it is that people know about its malleable nature.

We are vitally interested in answering more questions. In college, cross-race roommates have a notoriously difficult

time, and relations often erode as time wears on (Trail, Shelton, & West, 2009). Might theories about prejudice play a role here? Our preliminary data suggest they do. What is more, this may also be true in the workplace or the classroom, where bosses or teachers may feel uncomfortable with people of other races and, as a result, inadvertently make those people feel unappreciated or unwanted. Bosses with a fixed mindset about prejudice might also deny promotions to people of other races if they feel uncomfortable working closely with them.

Might well-intended messages (e.g., advocating color blindness) or well-meant educational or corporate programs (e.g., mandating training) unintentionally convey that prejudice is fixed? New research by Priyanka Carr indicates that they do, by conveying that discussing or even noticing race is taboo or by suggesting that expressions of prejudice need to be legislated from the outside. Finally, might learning about the malleability of prejudice enhance the effects of interventions designed to reduce prejudice, for example, by making people more open to the messages and by alleviating anxiety about interacting? This is an exciting avenue for future research.

Mindsets and Willpower

Willpower, as well as self-regulation more generally, has emerged as a key factor in effective functioning over time (Duckworth & Seligman, 2005; Mischel, Shoda, & Rodriguez, 1989). But what is this willpower, what is its basis, and how scarce or plentiful is it? A great deal of research says that willpower is a scarce commodity that is easily depleted (e.g., Muraven, Tice, & Baumeister, 1998). It suggests that working hard on a task for even a short while leaves people less able to do well on a subsequent hard task or that resisting one tempting item leaves a person more vulnerable to the next one that comes along. Is it possible that such vulnerability is built into humans? Is it human nature to be unable to sustain hard work or maintain resistance to things that are bad for us? Our research says that it is not.

Several years ago, Veronika Job came to study with me as a postdoctoral fellow. When she arrived, she had with her a preliminary questionnaire. This questionnaire asked people about their theories about willpower. More specifically, it asked them whether they believed that strenuous mental activity depleted them so that they needed rest and refueling (a *limited* theory of willpower) or whether they believed that strenuous mental activity energized them and fueled further strenuous mental exertion (a *nonlimited* theory). Another part of the questionnaire asked people whether resisting a temptation made them vulnerable to the next temptation (a limited theory) or whether it strengthened them and made them better able to resist the next one (a nonlimited theory). We refined the questionnaire and embarked on a series of studies to see whether willpower was a question of mindset over matter (Job, Dweck, & Walton, 2010).

In the first study, we gave people either a strenuous task or an easy task to perform and then gave them a second, strenuous one. Lo and behold, only people who believed in limited willpower showed a depletion effect after the strenuous task, performing more poorly on the second task. Those who believed that willpower was more abundant showed absolutely no depletion, performing every bit as well after a strenuous task as after an easy task. Of course, maybe some people just have more willpower than others and the ones who have it endorse the nonlimited theory, whereas the ones who do not endorse the limited theory. Therefore, in the next study, we gave people different theories of willpower, pushing them toward a limited theory or a nonlimited theory. Then we repeated the first study—and found the same thing. Only people who believed in depletion showed depletion. In a third study, we gave people a series of three hard tasks and still saw no sign of depletion for people who were given a nonlimited theory.

How do these theories affect self-regulation and goal striving in the real world? To find out, we followed Stanford students over their last quarter of the year, from April until June, and at three time points we assessed their self-regulation with respect to unhealthy eating (e.g., “During the last week how often did you eat junk food?”) and procrastination in studying (e.g., “During the last week how often did you watch TV or videos instead of studying?”). At the beginning of the study, we also had them identify an important personal goal that involved challenge and achievement, and we asked them each time how well or how poorly they had self-regulated toward that goal (e.g., “While striving for this goal I let myself get distracted often”).

The idea was that during periods with lower stress and fewer demands, people’s willpower theory should not make that much difference, but during periods with high demands for self-regulation, such as the week of final exams, it should make a big difference. And indeed, the limited willpower theory predicted worse self-regulation on every measure during the week of final exams: more unhealthy eating (junk food, candy, sugar drinks); more procrastination instead of studying; and less focused, effective goal striving. This means that people’s theories about willpower play out in the real world and can affect important outcomes.

We are following up on this work by asking many new questions. First, can people be taught a nonlimited theory in a way that might enhance their ability to self-regulate in their lives? Would teaching the nonlimited theory be even more effective if people were also taught good strategies for putting it into practice? After all, it might not be maximally effective to simply teach people that they have great resources of willpower if they do not understand how to deploy them successfully.

Second, much has been made of the idea that willpower is glucose dependent and that acts of willpower readily deplete glucose, which must then be replenished to restore

performance. We (Veronika Job, Greg Walton, Katharina Bernecker, and I) are systematically testing this idea, and our findings show that providing sugar is helpful only to those who believe in limited willpower—it does restore their performance—but it does nothing for people who do not believe in limited willpower and who did not show depletion in the first place. Moreover, in this research, those who believe in limited willpower showed restored performance even when they thought they ingested sugar but in reality did not.

Taken together, our findings call for a rethinking of the idea that human willpower is sharply limited and that it relies on a continuing intake of glucose to maintain it. Instead, it appears that a nonlimited mindset liberates people to work effectively for longer periods, to resist temptations during stressful times, and to remain more independent of glucose intake as they face self-regulatory demands.

Conclusion

I have shown that an emphasis on growth not only increases intellectual achievement but can also advance conflict resolution between longstanding adversaries, decrease even chronic aggression, foster cross race relations, and enhance willpower. Thus viewing the capacity for growth as a hallmark of human nature can confer a wide array of benefits, but how malleable are people? This is clearly an empirical question that cannot be readily answered; yet, as greater knowledge of human characteristics and the psychological processes that underlie them is gained, psychologists can become increasingly adept at bringing about positive change (Cohen, Garcia, Apfel, & Master, 2006; Diamond, Barnett, Thomas, & Munro, 2007; Walton & Cohen, 2007).

For scientists of human nature, this opens new doors for research. When human nature and its components are seen as relatively fixed, the scientist’s task becomes to identify people’s fixed qualities and, often, to categorize people on the basis of these qualities. When human nature is, instead, characterized in terms of people’s potential for learning and change, then the task is to understand how this learning takes place and how to maximize it. The task becomes to understand the dynamics of how people work, how they change, and how they can best fulfill their potential.

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