

Implicit Theories

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Abstract

My enduring interest has been in the implicit theories, or basic beliefs, that people use to understand their world and to guide their behavior. In my research, I have found that one type of belief about human nature—the belief that fundamental human attributes are fixed traits or that they are malleable qualities that can be developed—has profound consequences for how people function, how they relate to others, and what they achieve. In this chapter, I trace the development of my interest in implicit theories from my beginnings in animal learning during the social awakening of the 1960s and the emerging cognitive revolution. Even then, I rejected the false distinction between basic and applied research, the false separation of affect, cognition, and motivation into different areas of study, and the false boundaries among fields of psychology (such as, individual differences and social psychology), and I show how this rebellious stance informed and is embodied in my work. I end by showing how implicit theory research is making inroads into closing achievement gaps, promoting intergroup relations and conflict resolution, fostering cultures of productivity, and encouraging health behaviors.

My abiding interest has been in the implicit theories, or basic beliefs, that people use to organize their world and to guide their behavior. I have been most fascinated by the fact that different people can form different basic beliefs. When one speaks of core knowledge about objects, space, time or number, psychologists assume that most people (unless or until they are trained in math or physics) achieve more or less the same kind of understanding. However, when one considers basic beliefs about people and their attributes, different plausible positions are possible.

I have been particularly interested in beliefs with strong motivational properties. It might be interesting from an intellectual standpoint that people can come to different conclusions about the nature of themselves and others, but it becomes even more intriguing if the different conclusions make a difference for the goals people pursue and the outcomes they experience in their lives.

For some years I have studied the consequences of believing either that fundamental human attributes are fixed traits or that they are malleable qualities that can be developed (see Dweck, 1999; 2006). My collaborators and I have built and tested a model of the motivational, cognitive, affective, and behavioral consequences of the different implicit theories—and have shown that these theories make a difference for people's achievement, relationships, careers, as well as their intergroup attitudes.

Personal Narrative and Intellectual History

I started my research career in a rat lab, studying animal learning, but the call of the cognitive revolution was too great.

I had gone to graduate school at Yale to study animal learning, and the work was interesting-- especially because I was in on the ground floor of the Wagner-Rescorla theory and because the work combined my interest in motivation and coping (e.g., Dweck & Wagner, 1970). The animal work on learned helplessness was also being conducted at that moment (Seligman, Maier, & Geer, 1968). It, too, had profound implications for how animals perceived reward contingencies, and how they used these perceptions to cope.

However, attribution theory was emerging and, for me, it held the promise of revealing how *people* interpreted the things that happened to them and how these interpretations guided the way in which they reacted. I could use my training in animal learning—training in parsimonious thinking and economical experimental design—and bring it to bear on the question of how people cope with the events that befall them.

Combining the seminal work on attribution theory (Weiner & Kukla, 1970) with the seminal work on learned helplessness (Seligman et al., 1968), I began to study how children coped with failure. My work revealed that children who attributed their failures to uncontrollable factors (e.g., their own lack of ability) showed a more helpless response to failure than those who attributed their failures to more controllable factors (e.g., their own effort) (Dweck & Reppucci, 1973). This helpless response to failure consisted of more negative affect, falling expectancies, less effective strategies and lower persistence, and did not in any way stem from lower ability.

I also provided evidence of a causal link between attributions and coping reactions through an intervention that changed children's attributions for failure and, in doing so, changed their helpless reactions to failure (Dweck, 1975). In my work, I have sought from the beginning to go back and forth between the lab and the field. The

advantages of laboratory work are clear. You have a thrilling degree of control over what happens and how you measure its effects. Yet, you always need field work to tell you whether what you've elegantly controlled and measured bears any resemblance to what happens in the real world to people who are not under your experimental spell.

Graduate school was a fabulous experience. The faculty at Yale made us feel that we could and would change the world, and the cognitive revolution gave us the tools to attempt just that. Coming out of a period of behaviorism, in which the contents of the mind were forbidden territory, it was exhilarating to study beliefs, perceptions, construals, processing strategies, and the like in all their glorious manifestations. The late 60s were a time of liberation. It was a time that was besotted with the idea of construction and it spawned a generation that rejected the oversimplified, deterministic, one-size-fits-all behaviorist theory, as it rejected the one-size-fits-all social constraints of the 50s.

The 60s and 70s witnessed the emergence not only of cognitive psychology, but also social cognition in social psychology, cognitive therapy in clinical psychology, and social-cognitive approaches to personality. However, as with any revolution, some of the good things were thrown out with the bad. Cognitions are in the head and much of social psychology remained trapped in the head, giving short shrift to motivation, affect, behavior, and real life. Psychology became so cognitive that the august series *The Nebraska Symposium on Motivation* attempted to drop "motivation" from its title. For me, however, the cognitive revolution meant that I could now address important outcomes with more tools at my disposal. I could now study how cognitive, motivational, and affective processes worked to produce behavior.

I also did not accept the idea that individual differences were not the domain of social psychology, or that social and personality psychology were essentially different fields. Virtually, every individual difference I have ever measured, I have also induced experimentally. Both individual-difference measures and the experimental induction of beliefs are ways of understanding what makes people tick, of gaining leverage into the workings of the mind. Moreover, this combination of measurement and experimental induction captures the dynamic way in which people function. People may have strong and lasting beliefs, but they can also be swayed by a powerful situational cue or message.

In truth, I never accepted the idea of disciplinary boundaries within psychology at all. For convenience, psychologists have carved up the person into different parts—the cognitive part, the affective part, the social part, the developing part. This allows us to bring order to academic departments, journals, and organizations. But we should not be deceived into thinking that these boundaries are real. What we are seeking as researchers is an understanding of universal psychological processes and as we achieve this understanding we illuminate all areas of psychology. A commonly expressed fear is that neuroscience, as it burgeons, will reify these boundaries and make psychologists all the more parochial. My secret hope, however, is that neuroscience will do the opposite. The brain will not observe the boundaries psychologists have created, and will show instead how basic processes create commonality among disciplines.

Finally, I did not accept the idea, prevalent at the time, that in order to be scientific a psychological researcher had to avoid applied issues. The 60s were, above all, a time when people cared about social issues and when unprecedented numbers of people became politically active. Ironically, as this was occurring, much of psychology was

becoming increasingly abstract and “irrelevant.” Fortunately, Yale was one of the places where modern social psychology was born, as psychologists returned from World War II and tried to capture in their research phenomena like persuasion or obedience to authority, phenomena that had played a role in the war. My mentors, fortunately, valued keeping a foot in the real world and making a difference.

My first job was at the University of Illinois, a wonderful department and, above all, an extraordinarily nurturing one. It is a place where people thrive. With my first graduate students, I took my work to the next level. We showed how the learned helplessness analysis (attribution processes) could shed light on gender differences in motivation and achievement. We demonstrated how girls, through their *better* treatment in grade school, could learn attributions for success and failure that would not serve them well later on when material became more difficult and success more uncertain (Dweck, Davidson, Nelson, & Enna, 1978). We also modeled this process experimentally. Later, with Barbara Licht, we showed how girls’ differing attributions for setbacks could illuminate their lower representation and achievement in math (Licht & Dweck, 1984). Here, we found the first evidence that the brightest girls might also be the most vulnerable. That is, we found a negative relation between IQ and girls’ performance after a setback: the higher a girl’s IQ, the less likely she was to master the material after a short period of confusion.

With Therese Goetz, we also showed that the helplessness model applied to social situations, and that we could predict via attributions who would show a helpless versus mastery-oriented response to social setbacks (Dweck & Goetz, 1980). Although many of these processes are easier to study in achievement/problem-solving situations, it has

always been important for us to show that our model applies more broadly, and we have done so in every phase of the development of our implicit-theory model.

With Carol Diener, we then fleshed out the helpless versus mastery-oriented responses to failure, monitoring the online moment-to-moment changes in cognition, affect, and behavior as children went from success to failure (Diener & Dweck, 1978). We learned many things from this work. What really hit home was the fact that different children were living in different psychological worlds. First, we saw how some children became excited and energized by difficulty. They were not simply “not helpless,” but rather actively welcomed the challenge. Moreover, these were not students who had necessarily done better than others in the initial, success phase. What was also interesting was that, unlike children who showed a helpless response, they did not seem to dwell on their difficulty, the reasons for it, and what it meant about them. In their talk-aloud narrative, they hardly ever even voiced attributions. Instead, they quickly became focused on mastering the new, more difficult problems. Finally, we monitored the exact problem-solving strategies students used and saw the helpless children as a group dissolved into ineffective strategies, while the mastery-oriented children remained highly strategic and taught themselves new ways to solve the problems. One child’s self-negating failure was the other child’s opportunity to learn. There seemed to be so much more than a simple difference in attribution involved. What else was going on?

An important piece of this puzzle emerged in my collaboration with Elaine Elliott and John Nicholls. In the course of intense discussions of achievement motivation over a period of time, we realized that achievement striving could be motivated by different goals: people could seek to demonstrate their ability (a *performance goal*) and/or to

develop their ability (a *learning goal*). Elaine Elliott and I also realized that these different goals could be generating the starkly different helpless versus mastery-oriented responses we had observed in previous research. In a research designed to test this hypothesis (Elliott & Dweck, 1988), our hunch was confirmed. When participants were led to hold strong performance goals and they lost confidence in their abilities, we saw the whole helpless pattern of cognition, affect, and behavior emerge. Only when participants given performance goals were also given a clear message that they had high ability were they able to hold on and persist in the face of setbacks. In contrast, when participants were led to hold strong learning goals, they displayed a mastery-oriented response to setbacks—interestingly, even when they had low confidence in their ability. When the goal is to learn, one doesn't need to feel that one is already high in ability in order to remain engaged and persistent.

This achievement goal framework has generated a great deal of research, shedding new light on achievement processes and on academic outcomes in the real world. For example, in relatively recent work (Grant & Dweck, 2003), Heidi Grant examined students who were taking a highly challenging pre-med organic chemistry course, and showed that learning goals predicted the maintenance of intrinsic interest in the face of an initial poor grade, recovery from an initial poor grade, and higher final grades in the course. Performance goals (the desire to show high ability), on the other hand, predicted loss of intrinsic interest after an initial poor grade, a failure to recover from an initial poor grade, and lower final grades in the course. Mediation analyses showed that learning goals predicted higher grades via deeper study strategies (see also

Elliot, McGregor, & Gable, 1999) and via motivation-relevant self-regulation (e.g., keeping up interest in the subject matter).

The achievement goal analysis has also been successfully extended to organizational settings, to sports, and to issues in clinical psychology, for example, using chronic goal orientation as a predictor of depression (Dykman, 1998).

As generative as the achievement goal framework seemed to be, for me the picture was not complete. I still wondered why it would be the case that people with equal competence would chronically value and pursue different goals. Why were some people so concerned with proving over and over again how competent they were, whereas others were eagerly looking for challenges and opportunities to learn?

The next eureka moment came in a series of meetings with Mary Bandura. We suddenly realized that the idea of *ability* itself had a very different meaning when one thought about measuring and judging it through performance goals than when one thought about increasing it through learning goals. In the first case, *ability* connotes something deep-seated and permanent, whereas in the second case, *ability* implies something more dynamic and malleable. We then realized that these different conceptions of ability might lie behind differences in people's chronic goal choices. It was this hypothesis—that theories of intelligence would predict people's goal orientation—that was tested and supported in Mary Brandura's dissertation research.

Over the next few years my students and I began to explore the ramifications of these implicit theories for motivation and behavior. Most memorably, Ellen Leggett and I spent day after day for several years developing the ideas into a broader motivational model, understanding and researching new aspect of the model, and developing

implications of the model for personality as a whole (Dweck & Leggett, 1988). Little did I realize that many years later I would still be doing this!

This is not because I am so patient, focused, and systematic. It is because the model, for me, provides a microcosm of human functioning and thus operates on several levels. Aside from the immediate findings are the insights they can give into underlying processes of cognition, affect, and behavior, and, at another level, the insights they can give into the nature of human personality, motivation, and dysfunction. I greatly admire psychologists who have used their more specific research to delve into basic human processes and to reflect on human nature (Mischel & Shoda, 1995; Bandura, 1986).

To best capture what the model has yielded to date, I will leave behind the chronology. Instead, I will describe the body of work (from my laboratory and other laboratories) that has yielded a greater understanding of how implicit theories work, how they develop, how they affect important outcomes, and what role they serve in the larger scheme of human needs. At a more specific level, I will discuss the role they play in stereotyping, interpersonal interactions, group conflict resolution, and clinically-relevant psychological processes. However, before doing so, I would like to underscore the importance of the exceptional colleagues I have been so fortunate to have in all the departments I have taught in. The atmosphere of passionate inquiry they fostered provided the perfect context for the development of ideas, and along with that, the development of enthusiastic and dedicated students. Those students, in turn, are the real stars of this research program.

Some Background Facts About Implicit Theories

What Are the Entity and Incremental Theories?

The implicit theories are beliefs about the nature of human attributes. In the case of intelligence or of personality, for example, an *entity theorist* believes that the trait cannot be enhanced, whereas an *incremental theorist* believes that the trait can be developed. Those who hold an incremental theory do not necessarily believe that everyone starts out with the same talent or potential, or that anyone can be anything. They simply believe that everyone has the ability to grow with the proper motivation, opportunity, and instruction.

These are really beliefs about control, not stability. An entity theorist believes that people do not have control over their attributes or the power to change them. However, an entity theorist may believe that intelligence or personality can deteriorate with age. Moreover, an incremental theorist believes that people can change, but not necessarily that most people do change.

Throughout the chapter and throughout much of our research, we proceed as though people who endorse a given theory act consistently in terms of that theory, but the reality is bound to be more dynamic. That is, although the theories are found to be relatively stable across time (e.g., Robins and Pals, 2002), they can also be activated by strong cues or experiences in a situation (Murphy & Dweck, 2009; Good, Rattan, & Dweck, 2008).

Implicit theories are conceptually related to other variables, such as essentialist beliefs (e.g., Bastian & Haslam, 2006), beliefs about group “entitativity” (e.g., Rydell, Hugenberg, Ray, & Mackie, 2007), or beliefs about genetic determinism (e.g., Keller, 2005). All of these constructs capture the extent to which people or groups are seen as having deep-seated, somewhat immutable natures or structures, and the findings from

these different lines of research are consistent with each other (Levy, Chiu, & Hong, 2006). The approach is also related to research on worldviews (e.g., Major, Kaiser, O'Brien, & McCoy, 2007; see Plaks, Grant, & Dweck, 2005), which seeks to capture the beliefs people use to organize and predict events in their lives.

Measures and Manipulations

We assess implicit theories by asking participants to agree or disagree with a series of statements half of which present an entity theory and half of which present an incremental theory. In the domain of intelligence, for example, an entity theory item asserts “You have a certain amount of intelligence, and you can’t really do much to change it,” whereas an incremental item states “No matter how much intelligence you have, you can always change it quite a bit.” In the domain of personality, an entity theory is tapped by items like “The kind of person you are, is something very basic about you and it can’t be changed very much,” whereas an incremental theory is reflected in items like “You can change even your most basic qualities.” Using these measures, on average, about 40% of people endorse an entity theory, 40% endorse an incremental theory, and 20% do not consistently endorse either theory.

Researchers have also developed domain-specific measures of implicit theories, for example, theories about particular abilities or domains, such as mathematics ability (Good et al., 2008), negotiation skills (Kray & Haselhuhn, 2007), managerial and decision-making skills (Taberner & Wood, 1999), emotion regulation (Tamir, John, Srivastava, & Gross, 2007), or relationships (e.g., Knee, 1998). Researchers have also developed measures that apply to the self versus others (Dweck, 1999) or to group characteristics rather than individual characteristics (Halperin et al., 2009; Rydell et al.,

2007; Tong & Chang, 2008) In each case, the measure asks whether the object in question can be changed/developed or not, and often the more specific and targeted measures have better predictive power (Rydell et al., 2007).

Many researchers have manipulated implicit theories. This has been done by giving instructions that portray the skill or domain in question as inherent and fixed or as learnable (Kray & Haselhuhn, 2007; Martocchio, 1994; Kasimatis, Miller, & Marcussen, 1996), by presenting participants with a “scientific” article to read that portrays the skill or domain as either fixed or malleable (Hong et al., 1999; Chiu, Hong, & Dweck, 1997; Kray & Haselhun, 2007), or, in more long-term interventions, by presenting a workshop that teaches the incremental theory (and then comparing the results to control groups that learn potentially useful but theory-irrelevant lessons) (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003; see also Heslin & Vandewalle, 2008).

Which Theory is True?

Both the entity and the incremental theory of intelligence have had their enthusiastic proponents. The entity theory was defended in *The Bell Curve* (Herrnstein & Murray, 1996), while the incremental theory was propounded forcefully by Alfred Binet (1909/1973), the inventor of the IQ test, as well as the research sociologist Benjamin Bloom (1985), paleontologist Steven Gould, (1996), and creativity researcher John Hayes (1989). However, although both theories may have some truth, recent research by cognitive psychologists and neuroscientists is suggesting that fundamental aspects of executive function and intelligence can be taught not only in young children (Rueda, Rothbart, McCandliss et al., 2005), but also in college students (Jaeggi, Buschkuhl,

Jonides, and Perrig, 2008). In a study with college students, (Jaeggi, et al., 2008) participants who were given training on a demanding working memory task, later scored significantly higher on an unrelated test of fluid intelligence. Fluid intelligence reflects the ability to reason and solve new problems. Moreover, the greater the training, the greater were the gains.

In the domain of personality, as well, researchers are reporting that even basic traits can show considerable change in adulthood (Roberts, Walton, & Viechtbauer, 2006). In addition, as I have argued elsewhere, beliefs and belief systems themselves form a central part of personality that can be changed with targeted interventions, leading to widespread effects (Dweck, 2008).

When Do Implicit Theories Have The Strongest Effects?

In general, we find that implicit theories have the greatest effect when people are confronted with challenges or setbacks. For example, in a study of students making the difficult transition to 7th grade (Blackwell et al., 2007), entity and incremental theorists had shown no differences in prior math achievement in the more nurturing setting of elementary school; however, they showed a clear and continuing divergence in grades in their new, more challenging environment. In a related vein, we found that in a college calculus course or in a pre-med organic chemistry course, entity and incremental students showed no difference in indices of prior preparation (such as math SAT scores), but showed diverging grades in these difficult courses as a function of their theories (Good et al., 2008) or their goals (Grant & Dweck, 2003).

Implicit theories also predict how people will judge other people, as I will describe below. People who believe in fixed traits engage in fundamentally different

person judgment processes than do people who believe in malleable human qualities. However, experience has taught us that this only holds when people believe they are forming and reporting their personal impressions of people, and not when they think they are performing a cognitive task with a right or wrong answer. When people are treating person information like variables in an equation that they are required to solve, their implicit theories play less of a role.

What Psychological Functions Do Implicit Theories Serve?

Implicit theories are beliefs about what people are made of and, by implication, how they work. As such, they should give people confidence that they can predict and control their social worlds. The work of Jason Plaks and his colleagues (Plaks, Grant, & Dweck, 2005; and Plaks & Stecher, 2007) provides evidence for this idea. They showed that when the predictions derived from people's implicit theories are violated, people experience anxiety and take steps to regain their sense of control. (Interestingly, this means that people will allow researchers to give them a new theory, as is done in experimental inductions or interventions, but they do not want to be left theory-less, that is, without a way of organizing and understanding how things work.)

Meaning Systems: How Implicit Theories Work

Implicit theories create psychological worlds. They operate by recruiting allied goals and beliefs that work together as a "meaning system" (Molden & Dweck, 2006).

These psychological worlds are portrayed below.

Goals

First, as I outlined earlier, the two implicit theories orient people toward different goals. Of course, everyone pursues all kinds of goals depending on the situation.

Nonetheless, for people holding the entity theory, motivation tends to be organized more around validating their fixed traits via performance goals, whereas for people holding the incremental theory, motivation tends to be organized more around enhancing their malleable traits via learning goals (Dweck & Leggett, 1988; Kray & Haselhun, 2007; Mangels, Butterfield, Lamb, Good, & Dweck, 2006; Beer, 2002; Robins & Pals, 2002). Several studies have dramatically shown the lengths that people holding an entity theory of intelligence will go to in order to look smart and not look dumb, often at the expense of important learning. For example, Hong et al. demonstrated that entity theorists express significantly less interest than incremental theorists in a remedial English course even when their English is poor and English proficiency is crucial to their academic success in college.

However, perhaps the most dramatic demonstration of the different goal orientations comes from an ERP (event-related potential) study, in which college students' brain waves were monitored for their patterns of attention as they took a very challenging general information test (Dweck, Mangels, & Good, 2004; Mangels et al., 2006). Analysis of the brain wave data showed that students who held an entity theory of their intelligence entered a strong state of attention to find out, after each question, whether they were right or wrong (satisfying a performance goal), but not to find out what their right answer really was, even when their answer had been wrong. In contrast, students who held an incremental theory of intelligence entered a strong state of attention both to find out whether their answer was correct (since that is also an important part of learning) and then again to find out what the correct answer really was. Indeed, when we later retested students on the questions they had missed (Mangels, et al., 2006), these

incremental students scored significantly higher on the retest than did those with the entity theory. Thus, different implicit theories appear to consistently engender different goals.

Effort Beliefs

According to attribution theory, effort is a controllable factor and therefore the attribution of outcomes to effort should generate high motivation and resilience and, in general, this seems to be true. However, in the entity theory meaning system, there's a hitch: effort has negative implications for ability (Blackwell et al., 2007; Leggett & Dweck, 1988; Hong et al., 1999; Miele & Molden, 2009)—and ability is what entity theorists care about. In fact, working hard appears to quickly undermine entity theorists' confidence in their abilities. In a recent series of studies, Miele and Molden (2009) showed that any manipulation that gave participants a feeling of exerting effort (even something like small font size in a reading comprehension task) lowered entity theorists', but not incremental theorists', estimates of their ability/performance.

On the other hand, those with an incremental theory believe that high effort is good and necessary for the development of ability, and that even people who are geniuses have to work hard for their discoveries (Blackwell, et al., 2007; Dweck & Legett, 1988). Their belief, by the way, is receiving increasing support, for example, in the work of Anders Ericsson (Ericsson, Krampe, & Tesch-Römer, 1993), who finds that the most successful people in their fields are those who have engaged in the most deliberate practice and not necessarily those who seemed the most talented earlier on.

Incidentally, like the other variables in the meaning system, effort beliefs are not only correlated with implicit theories (e.g., implicit theories and effort beliefs showed a

.54 correlation in a recent study of 373 adolescents; Blackwell, et al., 2007) but also follow on the heel of an implicit theory induction (Hong, et al., 1999)

Attributions

Implicit theories predict and generate different attributions for setbacks, with an entity theory orienting people more toward trait and ability attributions and an incremental theory orienting people more toward attributions that focus on effort or motivation. Our model does not argue that attributions are unimportant. Indeed several studies have shown them to be a key pathway from implicit theories to affective and behavioral responses in challenging situations (Blackwell et al., 2007; Robins and Pals, 2002; Hong et al., 1999). However, attributions occur in the context of implicit theories and goals. For example, in a study that tracked students over their college years, Robins and Pals (2002) found that attributions were significantly predicted by implicit theories, both directly and indirectly through goals. In addition, when implicit theories are induced, the allied attributions tend to follow (e.g., Hong et al., 1999).

Helpless and Mastery-Oriented Strategies

The final link in the system, and the one that leads directly to important outcomes, consists of the different strategies that are fostered by the two implicit theories. Whereas the entity theory tends to lead to helpless or defensive strategies, the incremental theory fosters more persistent, strategic, mastery-oriented strategies. In experimental studies (e.g., Hong, et al., 1999; Nussbaum and Dweck, 2007), those taught an entity theory of intelligence more often failed to confront their deficiencies and take steps to remedy them. Nussbaum and Dweck (2007) showed that after failure on a test, college students who were taught an entity theory of intelligence chose to repair their self-esteem, not

through learning, but through downward social comparison, that is, by looking at the tests of people who had done even worse. Those given an incremental theory overwhelmingly chose to learn by examining the tests of those who had done substantially better than they had. Nussbaum and Dweck also found that engineering students who had been given an entity theory did not choose to take a tutorial on the section of an engineering test on which they had done poorly, whereas those given an incremental theory overwhelmingly did so. In two longitudinal studies (Robins & Pals, 2002; Blackwell et al., 2007), students holding an entity theory were more likely than those holding an incremental theory to report responding to academic difficulty with withdrawal of effort or cheating, and less likely to respond with new strategies or renewed effort.

Typically mediated by these strategy differences, the implicit theories have been shown to predict differences in key outcomes, such as grades (Blackwell et al., 2007), IQ test scores (Cury, Da Fonseca, Zahn, & Elliott, 2008), changes in self-esteem over time (Robins & Pals, 2002), and negotiation success (Kray & Haselhun, 2007). In addition, as will be seen, interventions that teach an incremental theory yield improved outcomes in these and other areas.

Social Interactions and Social Relationships

Do implicit theories work similarly in other domains, such as interpersonal relationships? Indeed, implicit theories have been found to play a role in intimate relationships (Finkel, Burnette, & Scissors 2007; Kammrath & Dweck, 2006; Knee, 1998) and peer relationships in both children (Erdley, et al., 1997) and adults (Beer, 2002).

Beer (2002), for example, showed that shy people who endorsed an incremental theory about their shyness (“I can change aspects of my shyness if I want to”) elected to enter more challenging social situations, were more direct and active versus avoidant in their social interactions, and fared considerably better over the course of a new social interaction than did shy people who endorsed an entity theory about their shyness (“My shyness is something about me that I can’t change very much”).

In studies of intimate relationships, Ruvolo & Rotondo (1998) and Kammrath & Dweck (2006) measured participants’ theories about the malleability of other people’s personality (“The kind of person someone is, is something very basic about them and it can’t be changed very much”), with the hypothesis that conflicts and setbacks would be more daunting when people believed their partners’ flaws were permanent. And in fact, Ruvolo and Rotundo found that incremental theorists were better able to maintain relationship satisfaction even when they were faced with their partners’ flaws or weaknesses. Further, Kammrath and Dweck found that following an important conflict, incremental theorists were more likely to give voice to their dissatisfaction in order to solve the problem. And, in several studies involving either romantic partners or peers, incremental theories were found to be more predictive of a tendency toward forgiveness as opposed to revenge (Finkel, Burnette, & Scissors, 2007; Yeager & Dweck, 2009.). Believing that others can change, it appears, allows people to take steps to influence them and work things out; believing that others cannot change leaves fewer good options: keep silent, leave, or seek payback.

Moreover implicit theories appear to operate in the social domain in similar ways to the intellectual-achievement domain. That is, people’s self-theories are linked to their

goals (Beer, 2002; Erdley, Cain, Loomis et al., 1997; Knee, 1998), attributions (Erdley et al., 1997), and mastery-oriented vs. helpless responses to threat or setbacks (Beer, 2002; Kammrath & Dweck, 2006).

Person Perception, Social Judgment, and Stereotyping

It was not long before we began to ask whether implicit theories also affected how people perceived and judged others. If so, we might understand more about the basis of stereotyping and prejudice. This seemed especially interesting to us since it would mean that a belief that on the face of it had little or nothing to do with stereotyping could lay a foundation on which stereotypes thrived.

Ying-yi Hong, C.Y. Chiu, Cynthia Erdley, and I reasoned that the process of person judgment would be quite different for a someone who believes that people are made up of fixed traits than for someone who believes that people are more dynamic and malleable. A belief in fixed traits should lead to a search for fixed traits, a relative neglect of the situation or the target's motivation, and more rigid judgments once they are rendered. This is exactly what we tested.

We found, first of all, that lay dispositionism and the fundamental attribution error were alive and well in entity theorists but were languishing in incremental theorists. For example, we found that entity theorists perceived almost any behavior as indicative of a person's underlying moral character (including such things as making one's bed in the morning) (Chiu, Hong, & Dweck, 1997). Interestingly, they did not rate the behaviors themselves as better or worse than did incremental theorists; they simply saw different implications for moral character. Entity theorists also more strongly believed that a person who was, say, more friendly or aggressive than another in one situation would

also be more friendly or aggressive in a very different situation. Incremental theorists actually believed that the other guy would be the one to be more friendly or aggressive in the new and different situation—the opposite of the fundamental attribution error.

Next, we found that entity theorists were more likely to neglect salient information about the situation (Molden, Plaks, & Dweck, 2006; Erdley & Dweck, 1993; Gervy et al., 1999) or the target's motivation (Erdley & Dweck, 1993; Chiu, 1994) when making their judgments, but paid heightened attention to trait or trait-consistent information (Molden, Plaks, & Dweck, 2006; Plaks, Stroessner, Dweck, & Sherman, 2001). A similar bias was observed in their explanations for behavior: entity theorists were more likely to generate trait explanations for a target's behavior and less likely to think about psychological processes (for example, motives, needs, construals) that could have caused the actions (Hong, 1994).

Moreover, even though entity theorists' trait inferences are drawn very rapidly, often from very preliminary information, (Butler, 2000; Chiu, Hong, & Dweck, 1997), they appear to have great confidence in them. They do not readily revise them in the face of counter-information (Plaks et al., 2001; Erdley & Dweck, 1993) and they are willing to base decisions on them (Gervy et al., 1999). For example, Gervy, et al. showed that entity theorists made strong inferences about moral character based on what the target, a defendant, was wearing on the day of the murder (a black leather jacket vs. a business suit) and these judgments paralleled their guilty verdicts—to the point that potentially exonerating evidence had no impact on their decisions. And, believing they have judged a person as good or bad, entity theorists have a stronger tendency to endorse punishment as

opposed to education for someone who has transgressed (Gervey et al., 1999; Erdley & Dweck, 1993; Chiu, Dweck, Tong, & Fu, 1997).

Do these differences in person perception processes apply to the perception of groups and the formation of group stereotypes? Levy, Stroessner, & Dweck (1998) and Levy & Dweck (1999) set out to explore this question by exposing participants to novel groups. Basically, people were given favorable or unfavorable information about some members of a group (or groups). We found that entity theorists formed stereotypes (global trait judgments of the groups) more readily, perceived greater homogeneity within groups and greater differences between groups, were more likely to generalize group traits to new members about whom they had no information, and had more extreme desire to interact or not interact with a group member based on the group information they had received.

We also found that entity theorists also had more stereotyped views of existing groups (Levy, Stroessner, & Dweck, 1998), and that they were more resistant to information that countered a stereotype (Plaks, Stroessner, Dweck, & Sherman, 2001). In other words, as with the perception of individuals, those who held an incremental theory about human attributes made less extreme and more provisional judgments that were open to revision. In fact, Plaks et al. found that incremental theorists were often more attentive to information that countered stereotypes than they were to information that confirmed them. Rydell et al. (2007) extended this work by examining people's theories about the fixed or malleable nature of groups (rather than individuals). Although they replicated past findings by showing that an entity theory about individuals predicted

greater stereotyping, they also showed that an entity theory about groups—a more domain-specific measure-- was an even better predictor of stereotyping.

For entity theorists there seems to be something “real” about belonging to a group, whether it is a social group, an occupational group, or a group based on race, ethnicity or gender. For them, group members inevitably share traits. In a striking demonstration of this, Eberhardt, Dasgupta, & Banaszynski (2003) showed people pictures of biracial (morphed African-American and Caucasian) faces, telling them that a given face belonged either to an African-American or a Caucasian individual. When they were later asked identify the face or draw the face, entity theorists chose/drew a face that accorded more with the label than did incremental theorists, who often chose/drew a face that moved farther away from the stereotype.

Yet believing in fixed traits does not always predict greater stereotyping or prejudice. In very interesting work, Haslam & Levy (2006) showed that believing that gays’ sexual preference was inborn and unchangeable predicted *less* prejudice. In this case, people apparently found it more acceptable to think of gays as having inborn tendencies than tendencies that were self-chosen and subject to personal change.

Person theories predict people’s actual behavior toward groups, as well. In studies of volunteering in the real world, Karafantis and Levy (2004) found that children’s implicit person theories were related not only to their attitudes toward homeless children or poor children (e.g., their liking of them, desire to have contact with them, and their perceived similarity to them), but to their efforts on their behalf (volunteering, collecting money for UNICEF) and their enjoyment of those efforts.

Finally, Levy, Stroessner, & Dweck (1998) and Levy (1999) showed that changing adults or children's implicit theories changed their tendency to form group stereotypes, along with their attitudes toward group members and their willingness to interact with them in the future. Later I describe a recent study that addressed the question of whether changing implicit theories could change hardened intergroup attitudes and people's desire for reconciliation or compromise. We examined this in the context of the Arab-Israeli conflict, which brings us to our next topic.

Social Issues

Now that we have visited the two different worlds that implicit theories create, let us see whether this knowledge can illuminate social issues, such as longstanding group differences in achievement and intergroup relations. I will also ask whether implicit theories have a role to play therapy and in issues of self-regulation and health.

Group Differences in Achievement

At the heart of American society is a desire for equal outcomes across groups. For this reason, differences between gender, racial, and ethnic groups in academic achievement are cause for great concern. Researcher therefore began to wonder whether implicit theories could shed light on processes that create these group differences and on interventions that can shrink these differences. When a negatively stereotyped person holds an entity theory (or believes that the people evaluating them do), one can see why they might be more vulnerable. In the face of difficulty, they may more readily think "Maybe they're right. It's fixed and maybe I don't have it."

Thus experimental work has shown that when abilities are portrayed as fixed entities, stereotyped groups tend to show performance deficits on difficult tasks, but when

the abilities are portrayed as experience-based or acquirable, those deficits are greatly attenuated or non-existent. This has been shown for females and math (Dar-Nimrod & Heine), and for African American in verbal areas (Aronson, 1998). In a similar vein, in a longitudinal study of college women in calculus, Good, et al. (2008) found that when women perceived their math environment to portray math as a fixed ability, they were highly susceptible to stereotyping. In the face of stereotyping, they show a marked decrement in their sense that they belonged in math and, as they did, their desire to continue in math declined along with their course grades. However, when women perceived their math environment to be portraying math as an acquirable ability, they were far less susceptible to stereotyping. Even when they reported high levels of stereotyping in their math environment, they were able to maintain a sense that they belonged in math, a desire to continue in math, and high grades in math.

Interestingly, when abilities are portrayed as fixed, the positively stereotyped group, such as men in math, can benefit (Mendoza-Denton et al., 2008). The idea that “It’s fixed and I have it” may indeed be motivating in the face of a difficult task. This fits well with findings by Reich & Arkin (2006), who showed that people are quite sensitive to the implicit theories that other hold about them. In this research, when participants were matched with evaluators who held an entity theory of their ability, they reported greater self-doubt when they expected to do poorly and less self-doubt when they expected to do well. Thus, an entity theory may increase the achievement gap both by depressing the confidence, motivation and performance of the negatively stereotyped groups and by giving a boost to the positively stereotyped group.

Three implicit theory-based intervention studies have been conducted in academic settings, all showing an increase in motivation, grades, and/or achievement test scores for the experimental versus control groups (Aronson et al., 2002; Blackwell et al., 2007; Good et al., 2003). In these studies, middle school or college students in the experimental group learned an incremental theory of intelligence (that the brain forms new connections whenever they learn something new and that this learning makes them smarter over time) and how to apply this to their studies. Students in the control group learned other useful things, such as, in the Blackwell et al. study, a series of important study skills.

In the Aronson et al. (2002) study, African-American college students' grades, enjoyment of academic work, and valuing of academic work increased significantly--even though their perceptions of negative stereotyping in their environment remained high. In the Good et al. (2003) study of adolescents, the gender difference in math performance, which was clear and significant in the control group, was greatly reduced and was not significant in the experimental groups. A similar pattern was found in a further analysis of the data from the Blackwell et al. (2007) study.

Thus the belief that abilities can be acquired, and messages to that effect from those in one's learning environment, can help students fare better in challenging environments, and this appears to be especially so for targets of negative stereotypes.

Aside from direct interventions about the nature of ability, our research has shown that the type of praise students receive can have a striking effect on their implicit theories. This research was inspired by the self-esteem movement, with its gurus telling parents and educators to praise children's intelligence as lavishly and often as possible. Given our past findings, we thought this was bad advice. Sure enough, our studies (e.g., Mueller &

Dweck, 1998) demonstrated that praise for intelligence (as opposed to praise for effort or strategy, i.e., *process* praise) encourages more of an entity theory and performance goals, and, in the face of difficulty, leads to greater decreases in motivation, confidence, and performance. Although this work has not directly addressed achievement gaps, it suggests that in trying to boost the confidence and achievement of underperforming groups, it would not be a good idea to praise their abilities. Rather, it suggests that focusing them on learning and on the processes that lead to success—effort, concentration, persistence, strategies—would be far preferable.

Intergroup Relations

Conflict Resolution. Because implicit theories appear to have far-reaching effects on attitudes toward other groups (Hong, Coleman, Chan, et al, 2004; Levy, Strosner, & Dweck, 1998), they perhaps hold promise of reducing animosity and promoting accord between antagonistic groups. It may be an especially promising approach because changing implicit person theories does not involve directly trying to change people's attitude toward the "enemy," which would almost certainly meet with resistance. Rather it simply involves changing their ideas about people or groups in general. In new work, Halperin et al. (2009) show, first, that Israelis' attitudes toward peace with the Palestinians are moderated by their level of hatred for Palestinians; second, that implicit theories about groups predict Israelis' level of hatred toward Palestinians; and third, that fostering an incremental theory about groups in general both lowered Israelis' hatred of Palestinians and made the Israeli participants more favorable to a peace process. Inducing an incremental theory about groups was accomplished by means of an article that argued that groups do not have an inherent moral or immoral

character but rather are incited to aggression by leaders and that when the leaders change so may the group characteristics and behavior. No mention was made of Palestinians or their leaders.

Confronting Biased Behavior. Biased statements or actions present a good opportunity for educating outgroup members, particularly since such behavior is typically based on stereotypes or misinformation. However, confronting people and attempting to educate them presupposes that they can change. In new work, Rattan and Dweck (2010) show that when faced with biased remarks that included their group, people with incremental person theories were more likely to confront the speaker with the intent of educating him. Entity theorists, although they found the remark equally offensive, were not only less likely to confront the speaker, but also planned to avoid the speaker and people like him in the future. Additionally, we found that when people were led to hold an incremental person theory (by means of a scientific article that espoused and presented evidence for the theory), they were significantly more inclined to confront bias. Although not every situation permits the confronting of bias and although it is not incumbent upon negatively stereotyped individuals to confront bias whenever it arises, holding an incremental person theory may facilitate the process when it is appropriate or desirable.

Responses to Peer Bullying. Bullying and school violence have become a serious problems in schools around the world. I include this topic under intergroup relations because the victim of bullying is often a member of an outgroup, whether it is an ethnic or racial outgroup or a peer outgroup (e.g., computer nerds or kids who are physically different). Although the eradication of bullying is a top priority, it is also important to understand why some students respond to bullying with violent retaliation and others do

not. Yeager & Dweck (2009), with sizable samples of high school students from Oklahoma, California, and Finland, either asked participants to recall a time when a peer had greatly upset them or gave them a vivid bullying scenario that was written as though it was happening to them. They were asked to choose the actions they would most feel like taking. We found that implicit person theories predicted their preferred responses, with an entity theory consistently predicting festering resentment and the desire for violent, vengeful reactions (“hurting this person,” “Imagining them getting hurt”). Moreover, an incremental theory intervention lessened students’ desire for violent revenge.

Management and Business

Now more than ever business people must be responsive to the constant change that is taking place all around them, must be ready to correct the practices that are no longer working, and must be willing to try new approaches. To do otherwise is to risk stagnation or failure. Several lines of research have shown that implicit theories play a role in these processes. For example, Taberero and Wood (1999) demonstrated the benefits of an incremental theory of management skills for the performance of individuals and work groups on challenging management tasks, in which new, corrective information was constantly being provided. Kray and Haselhun (2007) demonstrated that an implicit theory of negotiation ability predicted (and caused) superior negotiation outcomes particularly on challenging tasks on which impasses were reached.

In an exciting program of research, Heslin and Vanderwalle (2008) showed that managers who held an entity person theory were less likely than their incremental counterparts (a) to be attuned to changes in employees’ performance after an initial good

or poor performance was witnessed, remaining stuck in the initial impression and b) to mentor their employees, as reported by the employees themselves. Heslin and Vanderwalle then provided workshops that taught an incremental theory to a subset of the managers who had held entity theories. The managers who received this workshop, when tested 6 weeks later, displayed significantly more sensitivity to changes in an employee's performance than did the managers in the control group, who had gone through a placebo workshop. In addition, they became more willing to provide mentorship and generated higher quality mentoring strategies.

In summary, implicit theories have implications for learning, teaching, and productivity in a challenging, changing world.

Clinical Psychology, Psychotherapy, and Health

Because they affect self-regulation processes and interpersonal processes, implicit theories may well contribute to clinical psychology and to psychotherapy. First, research has shown that an entity theory and/or its allied goals (performance goals) play a role in depression (Dykman, 1998), in the loss of self-esteem following setbacks (Niiya, Crocker, & Bartmess, 2004), and in the negative impact of self-discrepancies (not matching one's ideal self) (Renaud & McConnell, 2007). There is also evidence that implicit theories about emotion regulation can play a role in emotional and social adjustment during the transition to college, with entity theorists experiencing waning social support and greater depression over time (Tamir, et al., 2007)

Holding an entity theory of one's attributes increases defensiveness (Blackwell et al., 2007; Hong, et al., 1999; Nussbaum & Dweck, 2008), which is a problem in itself, but can also greatly impede personal change, both within and outside of a therapeutic

setting (see Dweck & Elliott-Moskwa, 2009 for a discussion of this). In addition, an incremental theory may predict better adherence to therapy, which inevitably is fraught with challenges and setbacks (see Dweck & Elliott-Moskwa, 2009, for a discussion of the potential role of implicit theories in cognitive behavior therapy). Preliminary evidence is also emerging to suggest that holding an incremental theory may predict better adherence to exercise and dieting in face of setbacks (Burnette, 2007; Kasimatis et al., 1996) This is an important area for future research and may well yield information about adherence to other health-maintaining or change-producing regimes.

Finally, therapists themselves may benefit from an incremental theory. Although most therapists, one hopes, hold the belief that people can change, they may approach very difficult patients (particularly ones who are threatening to their self-image as a competent therapist) with an entity theory. This may help protect the therapist from self-blame, but it may impede the therapeutic process if the therapist is less persistent in seeking strategies that can reach such clients (see Dweck & Elliott-Moskwa, 2009).

Conclusion

Research on implicit theories is giving us a portrait of people as dynamic creatures who are highly sensitive to cues in their environment and who are capable of change and growth. Moreover, the research is suggesting ways to promote that change and growth. As such, it is supporting a more incremental view of human abilities, human personality, and perhaps human nature.

When you begin a program of research, you have no idea where it will take you. I have stayed with this program of research because it continues to take me to new places. It remains challenging, it continues to yield provocative findings, and it has drawn me

into the real world as people in the fields of education, business, sports, and health have sought to use our research to illuminate their practices. I cannot imagine a career more stimulating or more fulfilling—or one more conducive to personal growth.

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