

Claire M. Zedelius  
Barbara C.N. Müller  
Jonathan W. Schooler *Editors*

# The Science of Lay Theories

How Beliefs Shape Our Cognition,  
Behavior, and Health

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# Foreword

**Carol S. Dweck**

What a thrill to see lay theories shedding light on everything from prejudice to creativity, thinking, self-regulation, health, freewill, and religion. It is very rare to say of an edited volume of scholarly chapters “I couldn’t put it down!” Yet that was the case with this book. It is not just that I have worked in this field for many years, but rather, with every chapter I felt I was gaining new insights into what, deep down, people really believe and how these beliefs influence their lives.

Lay theories took a while to capture the imagination of a wide swath of researchers. The cognitive revolution that began in the late 1960s shone a spotlight on thought processes, but not on beliefs or lay theories. Even in social psychology, where construals and interpretations became popular (as in attribution theory), little attention was paid to the underlying beliefs or lay theories that fostered these construals or interpretations in the first place. Researchers did not ask the deeper “Why?” And the deeper why’s are these fundamental assumptions people make about themselves and their worlds. You can call them lay theories, mindsets, world assumptions, mental models, but they are all about people’s fundamental understanding about the nature and workings of the people, things, and phenomena in their worlds.

In my own work, I came to lay theories by continually asking why. At first, I found that children’s attributions predicted their responses to failure. But I wondered *why* children with relatively equal ability would have such different interpretations of failure (with some blaming their ability and others focusing on their effort or strategies). So my colleagues and I started studying achievement goals and we found some answers there. But I still wondered *why*. Why would children of pretty equal ability have such different goals? That is when we discovered that lay theories of intelligence were at the heart of it all. Those who believed their intelligence was fixed, as opposed to developable, chose different goals and made different attributions in the face of difficulty. This is how our research on lay theories of intelligence was born.

Other researchers, at the same time, were also exploring the power of lay theories. Here are just a few examples. Melvin Lerner examined the impact of just world beliefs and what people will do to maintain their faith in that world. In a

related vein, Ronnie Janoff-Bulman examined people's assumptions about the safety and fairness of their world and studied the consequences of having those assumptions shattered. Attachment theorists were identifying people's working models of attachment—how relationships work and what you can expect from them. Even Piaget, the consummate theorist of pure logic and cognition, began to believe that people's world views might be as important as their logical thinking.

This book breaks open the field of lay theories and puts it in a much larger perspective. The chapters show how the field of lay theories has burgeoned and come to fruition. Interestingly, many of the research strands have emerged independently and are being brought together for the first time in this book.

Each chapter asks important questions about lay theories and offers intriguing and sometimes surprising answers. The chapters in the first section ask about the origins and nature of lay theories.

- Where do all these lay theories come from? Are they deeply embedded in human psychology or do they arise from our experiences in our social groups and cultures? Look for some very interesting examples of both.
- How stable are people's lay theories? Can we shift them to suit our goals or needs at the moment? Hint: They can shift in fascinating ways!

The next section addresses the consequences of lay theories about human psychological attributes or phenomena.

- What lay theory about willpower makes us want to push through and continue working rather than rest?
- What lay theories make us want to confront prejudice or injustice rather than throwing our hands up and moving on?
- You know how unusual thoughts can just pop into your head when you least expect them? Is this a good thing or a bad thing? Can we control them and, if so, should we try to?
- Are creative people born or made? Lay people and researchers (the experts) disagree. What do the experts think?

The third section highlights the consequences of lay theories about the metaphysical or supernatural:

- Do you think the question of mind–body dualism is relevant only to philosophers? If so, take a look at how believing in mind–body dualism can foster unhealthy eating.
- When are people most likely to produce magical explanations for something that happened? Hint: It is not about miracles.
- How do our religious beliefs shape so many aspects of our lives, including our self-regulation, risk-taking, and relationships?

And the final section deals with the consequences of lay theories about mental and physical health or illness.

- Is thinking about cancer as “a war with an enemy” good or bad for you?
- When therapists think of a mental disorder (such as depression) as biological, will they become more or less sympathetic to their patients?
- Is obesity something that is written in our genes or is it something we have personal control over? What are the advantages of these different points of view?

See what I mean? You will find yourself delving into one chapter after another, learning fascinating and valuable things about people’s deepest beliefs and the impact of these beliefs on all aspects of their lives. You will find yourself relating the chapters to each other and asking new questions. And you may well be tempted to try your hand at research on implicit theories yourself.

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# Mindsets About Malleability and Intergroup Relations

Aneeta Rattan and Oriane Georgeac

Stereotyping. Prejudice. Discrimination. We live in a world rife with unwanted intergroup bias. Is this inevitable, or can it be changed? Recent research suggests that people's yes or no answers to this question may determine which reality emerges, one in which intergroup relations are improved over time, or one in which they are continually marked by intergroup divisions and bias. That is, a burgeoning field of research shows that people's ideas about whether attributes can change or not—their naïve beliefs about malleability—have real consequences for intergroup relations.

The main goal of this chapter is to review the literature on these *lay theories* or *mindsets* about malleability (terms that will be used interchangeably) to illustrate how people's mindsets drive their outlook on and responses to stereotyping, prejudice, discrimination, and the likelihood of intergroup reconciliation. The central tenet of this chapter is that a lay theory approach offers much to the study of intergroup relations. Reciprocally, of course, the unique challenges of intergroup interactions also offer novel insights to the study of lay theories about malleability. Therefore, along the way, we will take opportunities to highlight some of the many open questions that may benefit from integrating the study of mindsets about malleability and intergroup relations.

To ground our discussion in precise psychological terms, we offer definitions of stereotyping (Cardwell, 1996), prejudice (Allport, 1954), discrimination (Dovidio, Hewstone, Glick, & Esses, 2013), and stigma (Goffman, 1963).

**Stereotyping:** The cognitive association of social groups with specific, positive or negative, traits or characteristics.

**Prejudice:** Affective negativity toward outgroups, which can be directed toward outgroup members on the basis of their group memberships.

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**Discrimination:** The differential and negative treatment of a person or group of people, due to their social group memberships. It can be a result of conscious or nonconscious stereotyping, prejudice, or ingroup preference.

**Stigma:** A characteristic that marks a person as “lesser than” in the minds of others, or the experience of being treated as “less than” due to the possession of said characteristic.

Although these cognitive, affective, and behavioral reactions to intergroup interactions are naturally arising characteristics of normal human functioning (Allport, 1954; Dovidio et al., 2013; Ito, Thompson, & Cacioppo, 2004) and thus play a social function in groups (Macrae & Bodenhausen, 2000; Taylor, 1981), they can also impede social interactions, harm members of negatively-evaluated groups, and undermine equity in society. For these reasons, and acknowledging this caveat, as we present the research linking mindsets about malleability to stereotyping and prejudice, we largely consider these intergroup phenomena in terms of their negative or unwanted effects on individuals and society. As we will show, mindsets about malleability fundamentally shape each of these intergroup dynamics. For this reason, we advocate an approach to intergroup relations that considers people’s lay theories about malleability.

## Mindsets About Malleability

This chapter focuses on mindsets about malleability, also called lay or implicit theories about malleability. Some people believe that characteristics (e.g., intelligence, personality, prejudice, groups, etc.) are fixed and stable—i.e., that they do not change over time. This belief is known as a fixed mindset, or entity theory. Other people, by contrast, believe that characteristics can grow and develop over time. This is called a growth mindset, or incremental theory. It is important to note that these beliefs, theories, or mindsets represent two ends of a continuous dimension along which people tend to be normally distributed (Dweck, 1999).

People’s lay theories or mindsets about the malleability of characteristics are naïve beliefs, learned through exposure and experience (Dweck, 1999). Because these beliefs focus on a core component of social understanding (i.e., malleability; Hong, Chiu, Dweck, Lin, & Wan, 1999; Weiner, Heckhausen, & Meyer, 1972; Weiner, 1985), they ground people’s meaning systems and snap into action as people encounter and interpret situations and other people (Plaks, Levy, & Dweck, 2009). In this way, lay theories serve as a perceptual lens or filter between a person and the world. That is, these beliefs drive people’s understandings of social information, their responses to it, as well as their goals and actions (Levy, Plaks, Hong, Chiu, & Dweck, 2001).

Mindsets are also domain specific (Dweck, Chiu, & Hong, 1995; Levy et al., 2001), pertaining to beliefs about the malleability of specific characteristics. The measurement of fixed versus growth mindsets involves asking people whether they agree or disagree with statements regarding a specific characteristic, such as

intelligence (e.g., “You have a certain amount of intelligence and you really can’t do much to change it”; Dweck et al., 1995; Dweck & Leggett, 1988), morality (e.g., “Whether a person is responsible and sincere or not is deeply ingrained in their personality. It cannot be changed much.”; Dweck et al., 1995), or prejudice (e.g., “People’s level of prejudice is something very basic about them that they can’t change very much”; Carr, Dweck, & Pauker, 2012), or regarding more generalized beliefs about the whole person (e.g., “kind of person” theories, “Everyone is a certain kind of person, and there is not much that they can do to really change that”; Chiu, Hong, & Dweck, 1997; personality theories, “A person can do things to get people to like them, but they can’t change their real personality”; Dweck, 1999), the nature of groups (“Every group or nation has basic moral values and beliefs that can’t be changed significantly”; Halperin, Russell, Trzesniewski, Gross, & Dweck, 2011; also see Rydell, Hugenberg, Ray, & Mackie, 2007), or the nature of the world (“Some societal trends may dominate for a while, but the fundamental nature of our world is something that cannot be changed much”; Dweck et al., 1995). Because mindsets are domain specific, it is possible for an individual’s beliefs to vary between strong incremental theories in some domains and strong entity views in other domains. In the review of research that follows, we will highlight the type of mindset that influences each intergroup phenomenon. We note, however, that the research on mindsets about malleability and intergroup relations has not been exhaustive, and therefore the question of which mindsets are most meaningful in intergroup dynamics and why remains open.

As naïve beliefs, implicit theories are latent knowledge structures that can be activated when relevant to the task or situation (Dweck & Leggett, 1988; Dweck, 1999). Here, the term “implicit” is used to evoke the fact that these beliefs underlie social perception and interaction, whether consciously or nonconsciously (Dweck, 1999)—as opposed to “implicit bias” which refers specifically to unconscious stereotypic associations (Greenwald & Banaji, 1995). Therefore, while people may not spontaneously describe their fundamental beliefs about the malleability or fixedness of a given characteristic as orienting their social understanding, they are nevertheless readily able to express these core beliefs when asked. Given this, measures of implicit theories are relatively direct and straightforward, as can be seen from the example items in the paragraph above.

We emphasize that these terms do not represent the sorting of people into different personality types. While most people have a core belief within a domain that drives their understandings, evaluations, and reactions, this does not mean that they are unaware of the alternative. Because of this general knowledge, it is possible to temporarily activate a specific theory in an experimental manipulation. Researchers have done so using articles that purport to summarize scientific findings (Bergen, 1991; Chiu et al., 1997), or with the subtler biased questionnaire manipulation that exposes participants to a target theory and only offers the option of agreement (Job, Dweck, & Walton, 2010; Rattan, Savani, Naidu, & Dweck, 2012). Research on mindsets about intelligence also shows that people can be trained in and convinced of a growth mindset with consequences that unfold over time, suggesting that such interventions can have lasting impacts on individuals’

beliefs (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003).

Most importantly, whether they are measured or manipulated, mindsets have meaningful consequences for stereotyping, prejudice, and people's reactions to intergroup contact. In the next section, we review research that showcases how mindsets (about the malleability of personality, of the "kind of person" someone is, and of prejudice) affect stereotyping and prejudice from the perspective of perceivers, that is, those who observe others across group boundaries and may exhibit stereotyping, prejudice, and discrimination. Following that, we summarize how targets of prejudice, that is, those who are subject to bias, are shaped by mindsets (about intelligence, personality, and groups) in contexts where they face stereotyping and overt or subtle prejudice. Of course, across situations the roles of perceiver and target can vary, and in some situations of intergroup conflict, people are both perceivers and targets at the same time (Richeson & Shelton, 2007; Shelton, Richeson, & Vorauer, 2006). Acknowledging this complexity, we use these terms to highlight whether we are discussing the expression of intergroup bias (i.e., on the part of perceivers), or responses to intergroup bias (i.e., on the part of targets). Toward the end of this chapter, we will return to discuss the broader implications of this work for intergroup reconciliation, which necessarily spans the perceiver-target distinction, and the potential for mindsets to promote more positive intergroup relations.

We also note that there are other types of lay theories that relate to intergroup dynamics (for a review, see Levy, Chiu, & Hong, 2006), but given our focus on mindsets about malleability, these are outside the scope of this chapter. To offer just a few examples of lay beliefs particularly relevant to the intergroup domain, research has documented the importance of lay theories regarding the protestant work ethic (Levy, West, Ramirez, & Karafantis, 2006; Rosenthal, Levy, & Moyer, 2011), beliefs about diversity (Plaut, Thomas, & Goren, 2009; Rattan & Ambady, 2013; Richeson & Nussbaum, 2004; Rosenthal & Levy, 2012), and belief in a just world (Bal & Van den Bos, 2017; Lerner, 1980). Others have also explored the related but distinct construct of psychological essentialism, defined as the belief that groups are distinct from one another because of their immutable, inherent and biology-based essences (Bastian & Haslam, 2006; Haslam, Rothschild, & Ernst, 2000; Haslam, 2017; Pauker, Ambady, & Apfelbaum, 2010), and lay theories about the biological or genetic nature of characteristics (Keller, 2005; Sanchez, Young, & Pauker, 2015; Williams & Eberhardt, 2008; Yzerbyt, Rocher, & Schadron, 1997). We note that holding a fixed mindset does not necessarily imply believing that characteristics are genetically determined, or denying the role of the environment in influencing these characteristics. It is indeed possible to believe that traits are influenced by one's environment and experiences over a certain period of time, but that after this period, traits come to "consolidate" into a fixed and stable state (Dweck, 1999). Similarly, holding a growth mindset does not necessitate rejecting the role that genetics may play in influencing individual characteristics, or equate to claiming that anybody has the potential to reach any goal (Dweck, 1999; Rattan, Savani, Naidu, & Dweck, 2012). More research should explore how these

different lay beliefs relate to one another, insofar as they do, and how they might mutually constitute stereotyping and prejudice (Haslam, Bastian, Bain, & Kashima, 2006; Levy, et al., 2006a, b).

## **Perceivers' Mindsets, Stereotyping, and Prejudice**

How do intergroup dynamics unfold on the perceivers' side? It begins with categorization (Taylor, 1981), which happens rapidly and often automatically (Ito et al., 2004; Ito & Urland, 2003). As perceivers categorize a person into an outgroup, the content knowledge associated with the corresponding social category comes online (Crisp & Hewstone, 2007; Freeman & Ambady, 2009, 2011; Macrae, Bodenhausen, & Milne, 1995). This content knowledge represents cognitive associations formed about the group through the course of everyday interactions with the world, and is known as stereotype content knowledge (Fiske, Cuddy, Glick, & Xu, 2002). Whether endorsed or not, these social group associations can rise to the level of consciousness, or remain nonconscious, but in either case can influence attitudes, cognition, and behavior (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Greenwald & Banaji, 1995). When perceivers agree with negative stereotypes, they can also exhibit the affective negativity that is referred to as prejudice (outgroup hatred, as opposed to ingroup love, Brewer, 1999; de Dreu, 2010; Halevy, Bornstein, & Sagiv, 2008; Halevy, Weisel, & Bornstein, 2011). When negative stereotypic associations and affective negativity yield negative or biased behavior or policies toward outgroups, this is considered discrimination (Dovidio et al., 2013).

These are basic processes fundamental to intergroup perception. But we also know that there is variance in the degree to which people endorse stereotypes and exhibit prejudice (Dunton & Fazio, 1997; Fiske & Neuberg, 1990; Kawakami, Dion, & Dovidio, 1998; Livingston & Drwecki, 2007), and variance in how much these intergroup dynamics are cued by environments (Crandall, Eshleman, & O'Brien, 2002; Pettigrew, 1959). We suggest that an approach to intergroup relations that accounts for the influence of lay theories about malleability can offer insight into this variance. Although much is left to do, we highlight research that offers compelling evidence that beliefs about malleability affect categorization, stereotype formation and endorsement, as well as the expression of prejudice.

### ***Categorization***

Upon encountering a novel individual, people diagnose their social category group memberships (Ito et al., 2004; Taylor, 1981). In the context of person perception, a fixed mindset is associated with viewing even minimal information as indicative of a person's character (Chiu et al., 1997). Extending this perceptual tendency to the

intergroup context, people who believe strongly that the “kind of person” someone is cannot be changed (a fixed mindset, or entity theory) may consider social category membership as indicative of identity to a greater degree than people who believe strongly that the “kind of person” someone is can be changed (a growth mindset, or incremental theory). Consistent with this prediction, Eberhardt, Dasgupta, & Banaszynski (2003) documented a difference in how entity versus incremental theorists respond to racial categories. Participants received demographic information about a target person that listed this person’s race as either “Black” or “White.” On the next screen, the image of the target person presented was a computer-generated face, morphed from a Black original face and a White original face. The question was whether people with fixed versus growth mindsets would differ in how they applied the prior categorization. To assess this, later in the study, participants had to recall the target person that they had seen by choosing him from two images. Unbeknownst to participants, neither image actually represented the target person that they had seen. Rather, one had been morphed with more of the original Black face, and the other had been morphed with more of the original White face. In a first study, which measured participants’ lay theories, entity theorists were more likely to choose the category-congruent face, whereas incremental theorists were more likely to choose the category-incongruent face. That is, those with a fixed mindset assimilated their mental representation of the target person toward the category label initially mentioned in the demographic information, choosing the “more Black” face when the target person had been labeled Black and choosing the “more White” face when the (same) target person had been labeled White. In contrast, those with a growth mindset exhibited the opposite pattern, contrasting away from the category label by choosing the image more dissimilar to the category initially mentioned.

A second study that manipulated mindsets replicated these patterns, showing a causal relationship between mindsets about malleability and these consequences for social categorization. Moreover, participants were asked to draw, from memory, the person they had seen. Independent judges (who never saw the original face or the category label) rated the drawings made by those in the entity theory condition as more in line with the category label participants had seen, but rated the drawings made by those in the incremental theory condition as more in line with the category label *opposite* to the one that was seen. The fact that participants exhibited these patterns even though they were equally able to correctly recall the racial label suggests that this was not mistaken identity or misunderstanding. Rather, these findings suggest that when it comes to social group categorization, people across mindsets are equally capable of accurately categorizing, but those with a fixed mindset ascribe and adhere to categories to a greater degree, whereas those with a growth mindset focus more on the characteristics that deviate from the category.

## ***Stereotype Formation***

These consequences for social categorization raise the question of whether mindsets about malleability also shape the way in which people develop impressions of groups. Building upon previous lay theories research in person perception, which showed that a fixed mindset orients perceivers more toward diagnosing a person's character and maintaining this judgment (Chiu et al., 1997; Erdley & Dweck, 1993), Sheri Levy and her colleagues theorized that a fixed, rather than a growth, mindset about the kind of person someone is might predispose perceivers toward treating even minimal information as characteristic of the whole group. That is, these researchers tested whether mindsets about malleability shape people's predispositions to forming stereotypes about groups. They offer compelling, convergent evidence from both middle school children (Levy & Dweck, 1999) and adults (Levy, Stroessner, & Dweck, 1998) showing that mindsets shape stereotype formation.

To test this proposition, the researchers offered an opportunity for perceivers to form a negative stereotype about another group. Children (aged 11–13) read about another (fictitious) school, in which several different students behaved in mostly negative ways such as calling a classmate's artwork ugly or not helping a classmate who dropped papers (Levy & Dweck, 1999). The question was to what degree children who believed personality is fixed versus malleable would stereotype this school as negative, and whether they would apply the stereotype to all students at the school. As theorized, the children who held a fixed mindset about personality formed more extreme negative stereotypes (on average considering the students at the school to be "mean") compared to the children who held a growth mindset about personality (on average considering the students at the school to be "a little mean"). Entity theorist children also applied these characterizations more globally, i.e., to all students in the school, than did incremental theorist children (Levy & Dweck, 1999). The difference in the stereotype formation process was perhaps most compellingly captured in children's verbal explanations for why students at the school behaved as they did. Entity theorists offered explanations grounded in traits more often, whereas incremental theorists offered explanations that touched on external factors. An additional study revealed that entity and incremental theorists differ in the degree to which they develop both positive and negative stereotypes. When asked to rate the students at the schools on a series of traits (nice–mean, honest–dishonest, friendly–unfriendly, generous–stingy, good–bad), fixed mindset children exhibited more extreme stereotypic judgments for both the "good" and the "bad" school compared to growth mindset children. That is, fixed mindset children perceived students at the "good" school significantly more positively and students at the "bad" school significantly more negatively than growth mindset children. In addition, fixed mindset children perceived students from each of the two schools as less likely to share interests and activities with each other than did growth mindset children (Levy & Dweck, 1999). The fact that entity theorists also formed more positive stereotypes for the "good" school compared to incremental theorists

suggests that they are not necessarily more negative or critical than incremental theorists (and vice versa, that incremental theorists are not just optimists compared to entity theorists), but rather that a fixed mindset predisposes people to form and rely on stereotypes more than a growth mindset.

Adults also show this predisposition toward stereotype formation when they hold more fixed views of others (Levy et al., 1998). Undergraduates read about student groups at another school, who (among some neutral behaviors) either engaged in negative behaviors, such as pushing to the front of a line, or in positive behaviors, such as sharing an umbrella with a stranger. They then wrote descriptions of the groups. Entity theorists made more references to traits in their descriptions of the groups, used more extreme adverbs (e.g., “very,” “always”), and reported seeing the “good” and “bad” groups as more dissimilar compared to incremental theorists. Particularly noteworthy is the fact that entity theorists made their ratings of the groups faster than incremental theorists, and reported feeling more satisfied with the (relatively minimal) amount of information they had been offered about these groups. That is, not only were entity theorists more likely to spontaneously form extreme stereotypes about the groups, but they were also quicker to form their judgments compared to incremental theorists.

Research also shows that mindsets play a role in protecting stereotypes. That is, extensive research has shown that stereotypes, once formed, are highly resistant to change (Bodenhausen, 1988; Devine & Elliot, 1995; Maass, Salvi, Arcuri, & Semin, 1989; Macrae, Hewstone, & Griffiths, 1993; Weber & Crocker, 1983). Plaks, Stroessner, Dweck, & Sherman (2001) explored what role mindsets about malleability might play in the maintenance of stereotype content. The researchers both measured and manipulated people’s mindsets about the malleability of the kind of person someone is. They exposed people to stereotype-consistent information, stereotype-inconsistent information, or stereotype-irrelevant information about a Nazi (a negatively-stereotyped target) or a priest (a positively-stereotyped target), or, in another study, an entirely novel social group. In line with the findings reviewed above, those who held fixed mindsets clung to stereotype-consistent information, paying it more attention and preferentially remembering it. Those with growth mindsets, by contrast, allocated more attention to and remembered information that differed from the stereotype, whether it was inconsistent or irrelevant. Thus, a picture begins to form of how the same world may appear strikingly different from the entity versus incremental perspective (Dweck et al., 1995). Those who believe personality and people are fixed are more likely to attend and adhere to category boundaries, form more extreme stereotypes more quickly, and preferentially attend to and remember stereotype-consistent information relative to those who believe personality and people are malleable.

## ***Stereotype Endorsement***

Even if those who hold a fixed mindset are more likely to form associations between groups and characteristics, it does not mean that they necessarily endorse social stereotypes to a greater degree; indeed, one can know the content of a stereotype while disagreeing with it (Devine, 1989). Levy, Stroessner, & Dweck (1998) tested this directly. When they asked people with growth and fixed mindsets to list cultural stereotypes that exist about different groups in society, including African Americans, Asians, Caucasians, Hispanics-Latinos, and Jews, there were no differences in the number or valence of stereotypes listed. That is, when it comes to stereotype knowledge, people across the range of mindsets are equally likely to know stereotypic associations that are prevalent in society. Yet, when they tested for stereotype agreement – how much these participants considered the stereotypes to be true – systematic differences emerged. Those who had endorsed a growth mindset were significantly less likely to agree that the stereotypes were true compared to those who had endorsed a fixed mindset (Levy et al., 1998).

Another study confirmed that mindsets have a causal impact on stereotyping (Levy et al., 1998). Participants were randomly assigned to read an article that described scientific evidence either stating that “personality is changeable and can be developed,” (the incremental theory condition) or that “personality, like plaster, is pretty stable over time” (the entity theory condition; Chiu et al., 1997). These articles manipulated participants’ beliefs about the malleability of personality, at least for the short term. Participants then indicated how much they thought different characteristics accurately described African Americans, Asians, Latinos, teachers, doctors, lawyers, and politicians. Some of the characteristics represented stereotypes of the groups, and some did not. Participants who had been randomly assigned to read the entity theory article were more likely to agree that the relevant stereotypic characteristics were descriptive of these racial and occupational groups than those who had read the incremental theory article. There was no difference in how descriptive participants rated the non-stereotypic characteristics, showing that mindsets have particular relevance to how people apply social stereotypes, not social descriptors in general. While stereotyping is multiply determined, Levy et al. (1998) have shown that the influence of mindsets about the malleability of personal characteristics on stereotyping occurs over and above the influence of social desirability, right-wing authoritarianism, attributional complexity, need to evaluate others, and personal need for structure. In sum, this body of work reveals that entity and incremental theorists endorse societal stereotypes to different degrees.

## ***Prejudice***

If people’s malleability mindsets shape how much they assimilate individuals into social categories, how readily they form stereotypes, and how much they endorse

stereotypes, then do they also drive affective negativity toward stigmatized groups (i.e., prejudice) or differential behavior toward stigmatized group members (i.e., discrimination)? Classic research on mindsets and intergroup relations has included hallmark measures of prejudice, such as a (lack of) affective warmth (e.g., feeling thermometer; Krysan, 2000; McConahay, 1986), desire to maintain social distance (Bogardus, 1947), and insensitivity toward the suffering of disadvantaged groups (Čehajić, Brown, & González, 2009; Harris & Fiske, 2006). This research offers suggestions of a role for mindsets about malleability in the expression of intergroup prejudice.

Recall that Levy et al. (1998), asked undergraduates to read about student groups at another school and varied whether the groups were described as engaging in positive or negative behaviors. In addition to the findings reported above, the researchers included a measure similar to classic prejudice measures of affective negativity (McConahay, 1986). They found that those with a fixed mindset evaluated the negative group more negatively than those with an incremental mindset on a scale ranging from “very negative” (−100) to “very positive” (100; Levy et al., 1998), suggesting that a fixed mindset might predispose people to exhibiting greater affective negativity toward outgroups than a growth mindset.

Similarly, Levy & Dweck’s (1999) study of middle school children’s stereotype formation included a measure of willingness to interact with members of the novel groups that children learned about, reminiscent of classic measures of social distancing (Bogardus, 1947). While children generally were disinclined to interact much with a group who behaved in an undesirable manner, entity theorists were still more likely to socially distance compared to incremental theorists, reporting less desire to attend a party or be friends with members of the novel group (Levy & Dweck, 1999).

Outgroup prejudice is also known to impair helping (Cuddy, Rock, & Norton, 2007; Hornstein, 1978; Levine, Prosser, Evans, & Reicher, 2005). Karafantis and Levy (2004) therefore explored whether mindsets about malleability would play a role in children’s outlook toward helping homeless children. They found that 9–12-year-old children who believed human attributes were more malleable had more positive attitudes toward homeless children, were more open to social interactions with homeless or UNICEF-funded children, and reported more past volunteering for people in need compared to children who believed human attributes were more fixed. When given the volunteering opportunity of participating in the Trick-or-Treat for UNICEF Program, children with growth mindsets about human attributes reported being more active participants, enjoyed the experience more, and were more willing to help in the future than children with fixed mindsets (Karafantis & Levy, 2004). Given the correlational nature of these results, it is of course difficult to determine the direction of these effects; it could be that volunteering engendered a more growth-oriented perspective among children, which in turn promoted active participation, enjoyment of volunteering, and willingness to offer future help. While Karafantis & Levy’s (2004) results suggest that mindsets could play a role in sustaining a virtuous circle of diminishing prejudice toward

outgroups through social engagement with causes, more research ought to be conducted to test the causal pathways.

The studies reviewed above are indicative of the idea that mindsets about malleability play a role in the expression of intergroup prejudice, although more must be done to investigate this directly. More recently, research has also investigated the role of fixed and growth mindsets in explaining the occurrence of discrimination, focusing on the persistent issue of gender discrimination in the workplace (Rudman & Kilianski, 2000; Simon & Hoyt, 2008). Consistent with previous work in the domain of stereotyping and prejudice (Levy et al., 1998, Levy & Dweck, 1999), Hoyt and Burnette (2013) found that participants with a growth mindset were less likely to exhibit a stereotypic preference for male versus female authorities. Going further, they found that perceiving the agentic leader prototype as more congruent with males (rather than females) is less predictive of discriminatory evaluations of female leaders among incremental theorists than it is among entity theorists (Hoyt & Burnette, 2013). That is, although everyone on average endorsed the prevalent and persistent gender stereotypes about leadership being a purportedly masculine attribute to some degree, those stereotypical associations yielded differential treatment of female leaders more among employees who held fixed, rather than growth, mindsets (Hoyt & Burnette, 2013).

Although more direct investigations of the link between mindsets about malleability and prejudice are necessary, the existing evidence suggests that those who believe personal attributes to be fixed exhibit more negative attitudes toward stigmatized groups, report more desire to maintain social distance from them, and are less motivated to offer help or contribute to those groups' improvement. Similarly, additional research should explore how these mindsets influence different types of real-world discrimination, both in the domain of gender and management (Hoyt & Burnette, 2013) and beyond.

### ***Lay Theories of Prejudice***

The preceding section showcased research that linked mindsets about malleability to prejudice, both in terms of its classic definition of negative animus and through its indicators, particularly avoidance of social interactions. However, more recent research suggests a more nuanced perspective is essential. Depending upon one's mindset, the prosocial desire to avoid being prejudiced against outgroups can ironically engender the precise avoidance or awkwardness in social interactions that typically are indicators of prejudice. How can this be? Note that all of the research reviewed above focused on lay theories about whether personality or the "kind of person" someone is can change or not. Earlier, we highlighted that people can also have mindsets about the malleability of domain-specific characteristics. Specifically, research on people's beliefs about the malleability of *prejudice* itself has discovered these surprising and ironic consequences.

In the preceding sections, we highlighted that perceivers are those who observe and classify others, in the course of which stereotypic associations can be activated and prejudice can be expressed. What about members of majority groups who *do not* endorse, or do not want to exhibit, stereotyping and prejudice? Carr et al. (2012) and Neel and Shapiro (2012) point out that, for these individuals, intergroup situations can represent a performance context. Following classic work in the domain of beliefs about intelligence (Dweck & Leggett, 1988), these researchers theorized that perceivers who view prejudice as fixed might have a greater performance orientation. That is, those with fixed mindsets about prejudice might want to showcase their unbiased nature and avoid challenging situations that might call their beliefs into question, which might lead them to avoid or exit situations in which they might reveal bias. In contrast, they theorized that perceivers who view prejudice as malleable might have a more learning oriented perspective, leading them to approach intergroup situations with an open outlook and to engage with challenge in this domain. Across studies where they both measured and manipulated these lay theories of prejudice, the researchers found support for this theory. Indeed, participants who endorsed a more fixed view of racial prejudice wanted less information about bias, wanted to and did exit intergroup interactions more readily, and were less likely to take learning opportunities focused on race and racism (Carr et al., 2012; Neel & Shapiro, 2012). When Carr et al. (2012) asked fixed and growth mindset participants to set up chairs for a conversation with an outgroup member, fixed mindset participants set the chairs almost 10 inches further away from each other than growth mindset participants did. These beliefs also accounted for awkwardness *during* interracial interactions; perceivers with fixed mindsets exhibited more anxious, negative, and disengaged nonverbal behaviors in an in-person interaction that either focused on race or involved an outgroup member (Carr et al., 2012; Neel & Shapiro, 2012). These effects emerged above and beyond participants' degree of racial bias, highlighting that similar types of awkwardness and social disengagement in intergroup interactions might arise from negative animus toward outgroups, as well as, paradoxically, from a belief that prejudice is fixed and the performance-oriented outlook that follows (Carr et al., 2012; Neel & Shapiro, 2012).

This research on lay theories about prejudice converges with other work in intergroup relations highlighting that a focus on performance in interracial interactions can heighten anxiety and tension, and reduce the fluency of such encounters (Butz & Plant, 2009; Richeson & Trawalter, 2005). Classic research suggests that learning orientations stem from growth mindsets, while performance orientations follow from fixed mindsets (Dweck & Leggett, 1988). Migacheva and Tropp (2012) offer compelling evidence of this link. They assessed how much middle and high school students thought they could learn from members of outgroups (i.e., an intergroup learning orientation; Migacheva & Tropp, 2012). They found that for both European and African American middle school children, having a learning (versus performance) orientation predicts greater levels of comfort and interest in engaging in interactions with members of the other group (Migacheva & Tropp, 2012). These beliefs affected interactions over time as well. Students who expressed

a learning orientation three weeks before a community-focused diverse summer camp expressed more comfort with, and interest in, interacting with members of different groups at the end of the camp (Migacheva & Tropp, 2012). Together with the work on mindsets about prejudice, these results suggest that promoting a learning orientation, or growth mindset, can be an effective lever to improve intergroup relations in the long run.

## ***Summary***

Mindsets about malleability influence multiple stages of intergroup processes on the perceivers' side. Mindsets about personality and the "kind of person" someone is shape categorization, stereotype formation, endorsement and maintenance, as well as the expression of prejudice. Yet, mindsets about prejudice itself offer new insight into why prejudiced-seeming behavior might emerge despite positive intentions on the perceiver's side. This body of evidence highlights that a full understanding of intergroup relations on the perceiver's side necessitates a consideration of mindsets about malleability.

## **Targets' Mindsets and Responses to Stereotyping and Prejudice**

Turning from the expression of stereotyping, prejudice, and discrimination to the experience of it, we now focus on mindsets about malleability and their consequences among targets of bias. Research has extensively documented the negative consequences of both subtle and overt stereotyping and prejudice for members of stigmatized groups (Dardenne, Dumont, & Bollier, 2007; Vescio, Gervais, Snyder, & Hoover, 2005; Wolfe & Spencer, 1996). Although there is much left to explore, research to date suggests that mindsets about malleability can play a role here too, influencing targets' vulnerability to stereotypes and their reactions to overt expressions of prejudice.

## ***Social Identity Threat***

A concern about confirming negative stereotypes about one's group, known as stereotype threat or social identity threat, characterizes the experiences of stigmatized individuals in diagnostic performance contexts where stereotypes are salient (Steele & Aronson, 1995). This sense of threat has a myriad of negative consequences: increased anxiety, reduced working memory and learning, reliance on the

first response that comes to mind during a test, and increased rumination (Jamieson & Harkins, 2007; Schmader, Johns, & Forbes, 2008; Schmader & Johns, 2003; Taylor & Walton, 2011). More broadly, stigmatized individuals under social identity threat exhibit decrements to their performance and their sense of belonging (Good, Rattan, & Dweck, 2012; Steele & Aronson, 1995).

Considering the conditions under which stereotype threat arises, Aronson, Fried, and Good (2002) considered the possibility that a growth mindset about intelligence might serve an important buffering role. Recall that social identity threat arises when stereotypes are salient in diagnostic performance conditions. Yet, diagnostic situations are not evaluated or experienced in the same way by everyone. In her seminal work on mindsets, Dweck (1999) (see also Dweck & Leggett, 1988) showed that people who view intelligence as fixed orient toward performance and see difficulty as indicative of a lack of ability, whereas people who think intelligence can grow orient toward learning and see difficulty as an opportunity to overcome challenge through effort. Pairing these insights, Aronson et al. (2002) investigated whether stigmatized students armed with a growth mindset might exhibit less vulnerability to the performance decrements associated with stereotype threat.

In the malleable pen pal condition, Aronson et al. (2002) taught undergraduate students about the growth mindset about intelligence. Students first watched an instructional video on the latest scientific evidence suggesting that brain capacities can grow, and then were asked to write a letter conveying this message to an “at risk” middle school student, using the ideas they had been exposed to and examples from their personal life. Participants in the control pen pal condition watched a video clip describing scientific evidence pointing to the multi-faceted nature of intelligence, and wrote a letter to a pen pal conveying this message (Aronson et al., 2002). In a second session, all participants again wrote the target message (either describing intelligence as malleable or multi-faceted, depending upon their condition) to a second pen pal. In the third session, participants were asked to transform their messages into audiotaped speeches, to be used in future interventions in schools. This three-session format was constructed in order to offer a strong condition manipulation. There was also a true control “no pen pal” condition, in which participants did not participate to any of the activities of these three sessions (Aronson et al., 2002).

Nine weeks later, African American students in the growth mindset intervention condition reported more enjoyment of academics, more identification with academic achievement, and better academic performance (controlling for prior SAT scores), compared to those in the two control conditions. While on average all students in the malleable condition exhibited benefits from learning about the growth mindset, the benefits were most striking among African Americans, the group vulnerable to stereotype threat in the academic context. Extending this work, a field experiment showed the impact that a growth mindset intervention could have on improving standardized test scores among students stigmatized by stereotypes about their gender, race, and income (Good et al., 2003). The researchers induced a growth mindset about intelligence in low-income, largely Latino/Hispanic

seventh-graders through the guise of a computer skills course. Girls in the growth mindset condition (as well as in an attributional retraining condition, and a combined growth mindset + attributional retraining condition) performed significantly better on the math portion of their end-of-year state standardized testing than girls in an anti-drug control condition.

Good, Rattan, and Dweck (2012) found that mindsets about the malleability of math intelligence not only affect performance, but they also influence the sense of belonging to math among stigmatized students. Recognizing that broad-scale stereotypes about ability are persistent and pervasive in academic settings, the researchers explored undergraduate women's sense of belonging as it unfolded over the course of a semester-long college-level calculus class. Moreover, this research investigated the possibility that it is not only one's *own* mindset that matters, but also the mindsets one perceives among important others in the context – in the case of an academic context, the teachers and other students. A few weeks into this semester-long calculus course, Good et al. (2012) measured women's perceptions of stereotyping in the classroom environment (e.g., "People in my calculus class believe that females are as good as males in calculus"), as well as their perceptions of a fixed versus growth mindset about math ability in the classroom environment (e.g., "People in my calculus class believe that people have a certain amount of math intelligence and they can't really do much to change it"). They found that when women perceived higher levels of gender stereotyping in the classroom context, also perceiving a growth (rather than fixed) mindset in the classroom protected their sense of belonging to math. Indeed, a highly stereotyping environment paired with growth mindset messages left women's sense of belonging as high as the sense of belonging evidenced among women who reported being in relatively low stereotyping environments. This protection had important consequences, since their higher sense of belonging to the math domain engendered a greater desire to pursue math in the future and higher end-of-term math grades.

Extending this theory into the domain of employment, Emerson and Murphy (2015) investigated whether organizations that espouse a fixed (versus growth) mindset about ability are more threatening to stigmatized employees. Mindsets about intelligence were conveyed through a manipulation of corporate mission statements. In the entity condition, a consulting company described its "performance-oriented" mission to recruit candidates with the "best" instincts and ideas, and to help employees be "the geniuses they are" by "encouraging, recognizing, and rewarding intelligence." In the incremental condition, the consulting company's mission statement was described as a "growth-oriented" one that involved recruiting motivated candidates with "a love for learning, passion, creativity and resourcefulness," as well as to help employees "improve and push through limits" by "encouraging, recognizing, and rewarding development." Women who read the mission statement that communicated an organization's fixed view of intelligence reported less trust in the organization than women who read the growth-oriented mission statement (Emerson & Murphy, 2015). The authors offered direct evidence of the link between environments that communicate fixed views of intelligence and heightened threat: the mistrust engendered by entity-oriented

environments (compared to the incrementally-oriented environments) was driven by women's heightened concerns about being negatively stereotyped. These processes are theorized to emerge because of the heightened diagnosticity of situations in an entity worldview. Consistent with that, women who imagined performing poorly in a meeting with a company representative were more likely to disengage, but only when they were told the organization espoused fixed, rather than growth, views of ability.

These findings are supplemented by other research, which has found that when abilities are characterized as genetic or innate (expressions of a fixed view), gender differences in performance and pursuit ensue. Dar-Nimrod & Heine (2006) found that characterizing math ability as genetic (a view congruent with fixed mindsets) led women to underperform on a math test relative to women for whom math ability had been characterized as environmentally-determined (a more growth-congruent view). Leslie, Cimpian, Meyer, & Freeland (2015) surveyed faculty in the academic fields of science, technology, engineering, and mathematics (STEM) and found that the more faculty viewed talent in their field as stemming from innate factors (i.e., a field-specific fixed view of ability), the fewer women Ph.D. recipients there were in the field. Indeed, Cimpian and colleagues have documented that simply attaching high performance on a challenging task to a specific social category yields underperformance among other groups, and they theorize that this underperformance arises due to the spontaneous formation of fixed views of the ability that underlies the task (Cimpian, Mu, & Erickson, 2012). Interestingly, Mendoza-Denton, Kahn, & Chan (2008) showcase the other side of these dynamics that link mindsets about the malleability of intelligence and the performance of stereotyped groups. When one's group benefits from the stereotypes (e.g., Asians in the case of math), an entity theory about ability can systematically *boost* performance relative to an incremental theory (Mendoza-Denton et al., 2008).

In sum, being targeted by negative stereotypes has adverse consequences for stigmatized individuals' performance, sense of belonging, and overall engagement with the field in which they are stereotypically expected to do poorly. However, targets' vulnerability may depend upon the mindsets about intelligence or about specific domains of study (e.g., math) that they hold, or those that the environment communicates. Members of stigmatized groups who held, were taught, or perceived growth mindsets showed less vulnerability to social identity threat and retained their sense of belonging more. This body of research suggests incremental views of abilities may be an important, but underused, intervention strategy for allowing stigmatized individuals' talent to thrive in classrooms and workplaces.

### ***Responses to Overt Prejudice***

The experience of prejudice in the modern age is not only composed of subtle and systemic stereotypes. In their everyday social and workplace interactions, members of stigmatized groups continue to face overt expressions of prejudice (Deitch et al.,

2003; Dixon, Storen, & Van Horn, 2002; Swim, Hyers, Cohen, & Ferguson, 2001; Swim, Hyers, Cohen, Fitzgerald, & Bylsma, 2003). This occurs when women and minorities are told explicitly that, for example, they lack competence in specific fields, do not belong in certain contexts, or are unfit to lead due to their group memberships (Ely, Meyerson, & Davidson, 2006; Sue, 2010). Experiencing such overt bias has profound negative consequences for the psychological (Feagin & Sikes, 1994; Richeson & Shelton, 2007; Williams & Williams-Morris, 2000) and physiological (Harrell, Hall, & Taliaferro, 2003; Sawyer, Major, Casad, Townsend, & Mendes, 2012; Williams, Neighbors, & Jackson, 2003) outcomes of members of targeted groups. When faced with overt prejudice, women and minorities report wanting to speak out to express their disagreement with it, but often are held back from doing so due to situational pressures (Swim & Hyers, 1999) or the real risk of social and professional costs (Woodzicka & LaFrance, 2001). When they remain silent in the face of bias, women and minorities experience negative self-directed emotions and regret (Shelton, Richeson, Salvatore, & Hill, 2006).

Rattan and Dweck (2010) considered whether the mindsets that targets of prejudice hold might shape their experiences with overt prejudice. They theorized that members of stigmatized groups who hold a fixed mindset might view someone who expresses overt prejudice as fundamentally bad (e.g., racist or sexist). Because a fixed view of others means that someone who is biased will remain biased, this perspective might make responding to an expression of overt prejudice seem unlikely to have an impact. In contrast, they theorized that members of stigmatized groups who believe others can grow and develop might be less likely to diagnose someone as fundamentally biased based on a single expression of prejudice. Then, to those with growth views, the confrontation of prejudice might even represent an opportunity to educate and ameliorate perpetrators of bias. The researchers focused on implicit theories of personality, specifically, women's and minorities' views of whether personality can change. When minority undergraduates interacted with a confederate who expressed overt bias, those who held growth views of others' personality were more likely to spontaneously speak out to express their disagreement with the biased statement than those who held fixed views (Rattan & Dweck, 2010). In other studies, which assessed minorities' and women's responses to scenarios in which they encountered bias, the researchers found that participants with fixed versus growth mindsets (whether measured or manipulated) reported being less willing to confront the statement, even though they disagreed equally, and being less willing to interact with the perpetrator of bias.

While targets of prejudice should never bear the burden of being expected to address prejudice, the extant research suggests that they often want to speak out to express their perspectives (Shelton et al., 2006a, b; Swim & Hyers, 1999). From this perspective, we can see that a growth mindset affords minorities and women a motivational basis to take this desired action and to keep an open mind toward future relations subsequently (Rattan & Dweck, 2010). But what happens if growth mindset targets of prejudice do not speak out in the face of bias, which is not just possible but expected given the many factors that can silence women and minorities who face overt bias (Swim & Hyers, 1999; Woodzicka & LaFrance, 2001)? Earlier,

we pointed out that growth versus fixed mindsets do not simply map on to optimism versus pessimism, respectively. Instead, mindsets are a complex lens through which situations and actions are interpreted. Given this, absent a concrete action that offers perpetrators of bias an indication of (and an opportunity for) change, will growth mindsets still yield a positive outlook following an encounter with explicit bias?

In more recent work, Rattan and Dweck (2016) have tested exactly this question. They found that when minorities and women who held growth mindsets anticipated staying silent in the face of prejudice, they had an equally *negative* outlook on the perpetrator of bias as did minorities and women who held fixed mindsets. However, when fixed and growth mindset participants equally anticipated confronting prejudice, only those with a growth mindset experienced the benefits of a more positive outlook on the perpetrator of bias and maintained their sense of belonging and workplace satisfaction to a greater degree. Those who spoke out but had a fixed mindset were as negative in their outlook toward the perpetrator of bias, and reported similarly low sense of belonging and workplace satisfaction as those who stayed silent. These findings suggest that a growth mindset may offer adaptive advantages to minorities and women who face overt expressions of prejudice, but only when these lay theories are paired with change-oriented behaviors, such as the confrontation of prejudice.

### ***Intergroup Reconciliation***

Rattan & Dweck's (2010, 2016) results suggest that growth mindsets may be essential to addressing and reconciling after an instance of daily overt stereotyping or prejudice. In contrast to the everyday bias discussed above, protracted (or intractable) conflicts correspond to conflicts that involve a long history of rivalry and failed attempts at peace-making (Bar-Tal, 2001; Coleman, 2003; Vallacher, Coleman, Nowak, & Bui-Wrzosinska, 2010). In such hostile contexts, stereotype endorsement and expression are commonplace (Bar-Tal & Halperin, 2011), and the roles of perceiver and target fluctuate owing to the reciprocally negative attitudes that both sides hold toward each other (Halperin et al., 2011). Researchers have investigated whether mindsets can play a role in de-escalating such intractable conflicts (also see work on neutralizing interpersonal conflicts, Yeager, Miu, Powers, & Dweck, 2013; Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011).

In the context of protracted conflicts, the natural tendency to interpret others' behaviors in terms of their dispositions, rather than of the situational pressures that they experience (a tendency called the "fundamental attribution error"; Ross, 1977) represents a particularly meaningful barrier to reconciliation. These dispositional attributions indeed communicate that the root of all evil deeds is in the other side's very nature, which can lead to an escalation of the conflict. However, Levontin, Halperin, and Dweck (2013) proposed that people's long-term attitudes toward the outgroup may be differentially affected by people's short-term attributions (whether

dispositional or situational), depending of their mindsets. They theorized that people who hold an incremental view of personality may be less influenced by short-term attributions when forming long-term attitudes toward the outgroup, because they believe that outgroup members' personality, just like their circumstances, can change. In contrast, people holding an entity theory of personality may be particularly likely to translate short-term attributions into long-term attitudes. Since entity theorists believe that personality, unlike circumstances, cannot change, believing that the outgroup's behavior stems from its very nature will have more serious implications than believing that it is the product of specific circumstances. The authors therefore expected that entity theorists' long-term attitudes toward the outgroup would be more affected by these short-term attributions to internal dispositions than those of incremental theorists.

Among Jewish Israeli participants, Levontin, Halperin, and Dweck (2013) independently manipulated lay theories of personality as fixed or malleable and the type of attributions, as dispositional or situational, that participants had to make to interpret behaviors of seven fictitious characters. Results showed that when participants were led to believe in an entity theory of personality and led to make dispositional attributions, they subsequently exhibited more negative stereotyping and less support for the civil rights of Israeli Arabs compared to their counterparts who had been led to adopt an entity theory and to make situational attributions. They also opposed compromising to resolve the longstanding conflict more. However, the relative differences in stereotyping, support for civil rights, and willingness to compromise across attribution conditions were essentially erased when participants were instead led to believe in an incremental theory of personality, suggesting that incremental theorists are indeed less influenced by the type of short-term attributions for outgroup behaviors than entity theorists. These results suggest that promoting the view that human nature is malleable can be one lever to promote more constructive intergroup relations.

Another way to improve protracted intergroup conflict may be to facilitate intergroup contact (Allport, 1954; Pettigrew & Tropp, 2006; Tropp & Pettigrew, 2005a, b). However, intractable conflicts typically offer environments that are not conducive to cross-group interactions (Crisp, Husnu, Meleady, Stathi, & Turner, 2010). In the context of the protracted conflict between Greek and Turkish Cypriots, Halperin et al. (2012) investigated the possibility that mindsets about group malleability might play a causal role in increasing willingness to engage in intergroup contact. Turkish Cypriot participants were assigned to read an article that described the negative behaviors of groups engaged in violent conflicts as either fixed or changeable over time. Afterwards, Turkish Cypriots who learned that groups are malleable reported significantly greater willingness to interact with a Greek Cypriot compared to their counterparts in the fixed condition. This was due to the lower anxiety experienced by those in the incremental theory (versus entity theory) condition. Particularly noteworthy is the fact that the mindset manipulation was effective in the absence of any specific mention of the Cypriot conflict. Therefore, these results raise the possibility that mindset interventions describing the malleable

nature of intergroup conflict *in general* can lower group-level anxiety and promote intergroup contact among parties involved in *particular* conflicts.

To overcome longstanding conflict and pursue peace-making processes, people need hope (Bar-Tal, 2001; Moeschberger, Dixon, Niens, & Cairns, 2005). What role might mindsets about malleability play in engendering hope among members of groups involved in intractable conflicts? Saguy and Halperin (2014) found that Israelis who saw a Palestinian expressing intra-group critiques felt hope and openness, but only when the Israelis held growth mindsets about groups. Indeed, Israelis who saw groups as fixed remained unaffected.

Cohen-Chen, Halperin, Crisp, and Gross (2014) measured and manipulated beliefs in the malleability of *conflicts* in general, and found that Jewish Israeli participants who saw (or were led to see) conflicts as more changeable reported significantly greater hope regarding the resolution of the Israeli–Palestinian conflict. Their greater sense of hope in turn led them to report significantly greater willingness to make concessions on the core issues of the conflict, relative to Jewish Israelis who viewed conflicts as fixed and unchanging. Cohen-Chen, Crisp, and Halperin (2015) found strikingly similar consequences for the experience of hope and willingness to compromise when investigating people’s beliefs about the malleability of the world.

In sum, mindsets about malleability can play a role in fostering positive group emotions (hope) and alleviating negative ones (anxiety), thereby creating the conditions necessary for positive intergroup outcomes to emerge. However, positive progress may also depend on the willingness to acknowledge and apologize for past wrongs, or to offer collective apologies (Lazare, 2004). Wohl et al. (2015) proposed that lay beliefs about the malleability of groups may play a role in explaining when people are more versus less open to collective apologies. Israelis with growth mindsets about groups reported being more ready to accept a collective apology from Palestinians for the killing of innocent Israeli civilians, and were more in favor of initiating a peace process than Israelis with fixed mindsets about groups. This was because a growth mindset cast the apology as indicative of remorse to a greater degree than did a fixed mindset. Importantly, the authors ruled out the possibility that people who report having a growth mindset may also simply be more forgiving in general in the absence of a collective apology, there was no difference in fixed and growth mindset participants’ willingness to forgive. Finally, as noted, transgressions are committed on both sides in protracted conflicts. Wohl et al. (2015) also found participants with a growth mindset significantly more willing to reciprocate the apology compared to participants with a fixed mindset.

In sum, even in the context of the most entrenched real-world group conflicts, lay theories about malleability (of groups, conflicts, or the world) have a role to play. Convincing each party to adopt an incremental view may represent an effective lever to change the way both sides look at each other, attenuate negative group-based emotions, enhance positive ones, and move toward more constructive peace processes.

## **Conclusion: A Mindset Approach to Intergroup Relations**

Mindsets about malleability are meaning systems that function as an interpretive lens. For this reason, people's growth and fixed mindsets have the potential to influence virtually every aspect of the psychology underlying intergroup dynamics. On the perceivers' side, evidence shows that mindsets can shape categorization, stereotype formation, maintenance and endorsement, as well as the expression of prejudiced behavior (whether driven by negative animus or a desire to avoid prejudiced behavior). For those who are subject to negative stereotypes, mindsets can shape their vulnerability to social identity threat and responses to overt bias. Mindsets also have a role to play in longstanding real-world conflicts, offering insights into how to pave the way toward productive peace processes.

The study of intergroup relations gains much from considering perceivers' and targets' mindsets about malleability. While not yet exhaustive, the body of evidence on mindsets and intergroup relations challenges core assumptions in the study of intergroup dynamics. Consider the assumption that stereotyping is an inevitable, natural cognitive process. In the context of research on mindsets about malleability, we see that not all stereotyping is inevitable. To the contrary, growth mindsets orient perceivers toward individuating and category-inconsistent information (Eberhardt et al., 2003; Levy et al., 1998). Reflect on the behavioral indicators of prejudice according to the field of intergroup relations, such as the withdrawal from intergroup contexts and distancing from outgroup members. People's mindsets about prejudice reveal that these very same behaviors can actually arise out of a desire to avoid exhibiting bias, when people take a fixed perspective. More generally, research on intergroup dynamics has focused on biased cognition, attitudes, and behavioral reactions in the context of specific social groups. The research on mindsets about malleability highlights that generalized lay theories about personality, kinds of people and intelligence, which on the surface may seem to have no relevance to intergroup contexts, can yet have profound consequences for stereotyping and prejudice expression on the part of perceivers, and for targets' responses to both subtle and overt bias.

The field of intergroup relations has long documented the difficulties of creating meaningful change in people's stereotyping and prejudice, and the even greater challenge of maintaining it over time. Given this, another major contribution that the study of mindsets about malleability offers to the field of intergroup relations is the potential to implement concrete, practical, and scalable interventions that can be used to reduce group-based disparities, such as racial and gender achievement gaps, or to resolve longstanding conflicts. Though more research is of course necessary, particularly research that examines the long-term consequences of mindset interventions, integrating the study of lay theories into issues of intergroup relations offers untold potential for real-world impact.

Conversely, the study of mindsets gains much from considering intergroup relations contexts. The study of mindsets about malleability began with the investigation of the role of lay beliefs about intelligence in educational contexts,

and then extended to the study of interpersonal perception. It is important to remember that, by bridging the study of mindsets about malleability and intergroup relations, we have learned that lay beliefs matter for stereotyping, prejudice, and intergroup conflict – this was by no means an obvious or necessary extension of lay beliefs about malleability given that they are seemingly unrelated to intergroup dynamics on the surface. Yet, in the course of this research, multiple novel domains of lay theories about malleability have been identified, including beliefs about prejudice, groups, and even the world. The unique challenges of intergroup dynamics have also helped the literature on implicit theories to more fully grasp the diversity of outcomes that mindsets can influence, ranging from individual outcomes such as belonging and performance, to group outcomes such as the confrontation of prejudice and intergroup reconciliatory actions.

Furthermore, decades of research points to a simple and consistent pattern of growth mindsets yielding greater benefits than fixed mindsets, in the domains of achievement and person perception (Dweck & Leggett, 1988; Yeager et al., 2013, 2011). Yet, Rattan and Dweck (2016) have started to document conditions under which the benefits of a growth mindset may be undercut, such as in this case when targets of prejudice remain silent in the face of an expression of bias. Mendoza-Denton et al. (2008) even documented benefits of a fixed mindset, under certain conditions. Understanding the boundary conditions of the documented benefits and costs of growth and fixed mindsets, respectively, through the lens of intergroup dynamics thus illuminates and extends our understanding of the implicit theories about malleability. Further investigation may even suggest cases or conditions under which growth mindsets may prove to be maladaptive. Again, future research will have much to offer in exploring these possibilities, and will further showcase the ways in which the study of intergroup relations adds to our understandings of lay theories.

In the course of reviewing the collected evidence that mindsets influence intergroup relations, this chapter also highlights the need for more research in this domain. Much is needed, and here we highlight only a few specific areas that are most ripe for further work. There is a particular need for more investigations of when mindsets either influence or are irrelevant for social categorization, the expression of prejudice and discrimination. On the other side, targets of prejudice respond in a myriad of ways to being stigmatized, and more work could be done to investigate the role of mindsets in determining negatively-stereotyped individuals' stress and coping responses to bias, both in the short and long term. More practically, turning to real-world protracted conflicts, more research could be done to investigate how to spark and then maintain over time the sense of outgroups as malleable, given the positive trajectories that this belief may set people on.

In closing, we again highlight that the world is rife with unwanted intergroup bias. However, we suggest that the landscape of intergroup bias, and targets' responses to it, is not one size fits all. Rather, there is systematic variation in intergroup dynamics shaped by people's mindsets about malleability. Approaching the study of intergroup relations with an understanding of mindsets about malleability will offer greater insights and deeper understandings to the field of

psychology. Because people's mindsets can be changed, this approach also offers untold potential for improving intergroup harmony and equity in society, if this is the ultimate goal. We look forward to the future research that follows from an approach to intergroup relations that considers people's lay theories about malleability.

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