Mindset Theory

12

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Contents

Introduction

When Roger Federer says "I believe that I can still improve my game" (Hudson, 2014), this feels impressive but also somewhat odd; how can somebody with his achievements (at the time, aged 33, he had already won 17 Grand Slam tournaments, more than any other male player in the world) still believe that he can improve? Could such an extraordinary confidence in his ability to learn and to improve himself be part of his unmatched success as Grand Slam winner? Rodger Federer's quote illustrates what Carol S. Dweck called a **growth mindset**.[1] It involves the passion for learning, growth, and constant self-improvement and makes people capable of overcoming challenges and setbacks through endurance and the investment of effort. It's counterpart, the so-called **fixed mindset**, is characterized by the belief that one's competencies and talents (like intelligence or creativity) are carved in stone and basically unchangeable. According to Mindset Theory, people with a fixed mindset, as compared to a growth mindset, are more interested in proving and validating themselves than in actual improvement and, hence, more vulnerable to get discouraged by mistakes and setbacks.

[1]The use of the term "mindset" here is different from that used in the Mindset Theory of Action Phases (cf. Keller, Bieleke, & Gollwitzer, Chap. 2).

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K. Sassenberg, M. L. W. Vliek (eds.), *Social Psychology in Action*,
https://doi.org/10.1007/978-3-030-13788-5_12

Definition Box

Mindsets (or implicit theories) are people's lay beliefs about the nature of human attributes, such as intelligence or personality.

Fixed mindset (or entity theory) is the belief that human attributes, such as intelligence or personality, are fixed and cannot be changed.

Growth mindset (or incremental theory) is the belief that human attributes, such as intelligence or personality, are malleable and can be changed substantially.

The development of Mindset Theory originally began in the 1970s when Carol S. Dweck in her studies observed that children reacted very differently to challenges and setbacks (Dweck, 2012a). While some children were easily unsettled by difficulties and desperately tried to avoid them, others liked challenges and were even actively seeking them. Being intrigued by this observation and searching for an explanation, the idea of "implicit theories" was born when she and her colleague Mary Bandura figured that the meaning of failure was dependent on children's view of ability as something deep-seated and permanent or something they can develop. This insight built the starting point of an extensive research program in which Dweck, together with her colleagues and students, explored the origins and consequences of people's **implicit theories** in a variety of domains, such as academic and occupational achievement, health, or interpersonal relationships (Burnette, 2010; Dweck, 1999, 2012a, 2012b; Molden & Dweck, 2006; Yeager & Walton, 2011; for meta-analyses see Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013; Sisk, Burgoyne, Sun, Butler, & Macnamara, 2019). In this chapter, we will first describe Mindset Theory and its underlying mechanisms in the intellectual-achievement domain and interpersonal domain before we turn to an application of Mindset Theory in the context of interpersonal aggression.

Incremental Versus Entity Theories

People hold implicit theories about different personal attributes such as intelligence, personality, moral character, willpower, or body weight (Burnette, 2010; Chiu, Dweck, Tong, & Fu, 1997; Dweck, Chiu, & Hong, 1995; Hong, Chiu, Dweck, Lin, & Wan, 1999). In any case, an **entity theory** is marked by the idea that the attribute in question cannot willingly be changed, whereas an **incremental theory** is marked by the idea that it can be changed with effort (for an exception see Box 12.1). Importantly, these beliefs are about the *potential* to change not about the actual likelihood of change to occur (Yeager, Trzesniewski, & Dweck, 2013). That is, people can believe that personality can be changed, while they do not necessarily think that many people do change. It is further important to note that people's implicit theories are not necessarily the same for different attributes. The same person might believe that people can grow their intelligence quite substantially but that personality is a relatively fixed entity. This example implies another important feature of implicit theories, namely, that the agreement with an entity versus incremental theory is continuous. Research suggests that about 40% of people clearly endorse either a fixed or a growth mindset. But about 20% of people cannot be categorized into either group (Dweck, 2012a). So keep in mind that when we talk of people holding an entity or incremental theory, this is a simplification, which we use to explain findings in a comprehensible way.

Box 12.1 Zooming In: Implicit Theories About Willpower

While most implicit theories deal with the question of *malleability* of human attributes, implicit theories about willpower deal with the question whether people believe that willpower is *limited* versus *nonlimited* (Job, Dweck, & Walton, 2010). Willpower or self-control describes people's

capacity to alter their behavior, thoughts, and emotions in order to bring them into line with their own long-term goals or some external standard such as social expectations (e.g., Baumeister, 2002; Carver & Scheier, 1982; Metcalfe & Mischel, 1999; see also Gieseler, Loschelder, & Friese, Chap. 1). Some people believe that this capacity resembles a limited resource that gets depleted whenever used (limited-resource theory). Other people, however, reject this view and rather believe that using their willpower can even activate their mental stamina and prepare them for upcoming challenges (nonlimited-resource theory). In multiple laboratory studies, Job et al. (2010) found that only people with a limited-resource theory show declines in self-control performance given a previous self-control task (also known as ego-depletion effect), while people with a nonlimited-resource theory remained a high level of self-control performance. Field studies also linked willpower theories to self-control in everyday life. During the final examination period, when self-control is most important, students with a limited-resource theory procrastinate more, eat less healthy, and even earn lower grades compared to their fellow students with a nonlimited-resource theory (Job, Bernecker, Walton, & Dweck, 2015; Job et al., 2010).

Measurement of Implicit Theories

Usually, people are unaware of the beliefs they hold, which is why these beliefs are referred to as "implicit." Still, when being asked about what they think, whether human attributes can change or not, people can easily respond to this question. Therefore, implicit theories are measured via self-report (rather than with implicit measures such as reaction time paradigms). In accordance with their field of interest, researchers have developed scales to assess implicit theories with regard to different personal attributes. Table 12.1 shows example items for an entity and an incremental theory regarding four attributes, namely, intelligence, personality, moral character, and groups. These are by far not the only attributes implicit theories have been studied of, but all of them deal with the question of malleability (see Box 12.1 for an exception).

Table 12.1 Example items for measuring implicit theories

Attribute	Example items
Intelligence	You have a certain amount of intelligence, and you can't really do much to change it. No matter how much intelligence you have, you can always change it quite a bit. (Reversed coded)
Personality	Everyone is a certain kind of person, and there is not much they can do to really change that. All people can change their most basic qualities. (Reversed coded)
Moral character	A person's moral character is something very basic about them, and it can't be changed much.
Groups	Groups can't really change their basic characteristics.

Note. Participants usually rate their agreement with each statement on a 6-point Likert-type scale (1 = strongly agree, 6 = strongly disagree; e.g., Dweck et al., 1995)

Box 12.2 Question for Elaboration

Can you think of other attributes that people might have implicit theories about?

Stability of Implicit Theories

You might wonder whether people's agreement with an entity versus incremental theory changes over time or can even be changed intentionally as part of an intervention. The answer is twofold. On the one hand, longitudinal studies usually find implicit theories to be relatively stable over time, almost similar to a personality trait (e.g., Robins & Pals, 2002). On the other hand, experimental

studies demonstrate that there are ways to change implicit theories for shorter and longer periods of time, depending on the intensity of the methods used. For instance, a mindset can be shortly induced by providing people with "scientific information" that supports one of the theories or they can be changed over periods of several weeks by means of an extensive workshop (Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003; Yeager, Trzesniewski, et al., 2013). We will introduce one example of a successful long-term intervention later in this chapter when we talk about the application of Mindset Theory.

Origins of Implicit Theories

So far, only a limited amount of research has addressed the question where implicit theories come from. Some studies examined the influence of parenting practices on children's implicit theories about intelligence. Early research found that praising children for their abilities rather than for their effort leads children to adopt an entity theory (e.g., Mueller & Dweck, 1998). More recent research extended these findings and found that parents' view of failures affect their children's implicit theories via different parenting practices (Haimovitz & Dweck, 2016). Parents who believe failure is enhancing (instead of debilitating) are more likely to raise children who believe that intelligence can be changed.

This research suggests that implicit theories are developed early in life (e.g., Haimovitz & Dweck, 2016 studied fourth to fifth graders). However, recent research suggests that they can also change later in life. For instance, research focusing on implicit theories about willpower (see Box 12.1) examined change in willpower theories in college students over the course of one semester. Two studies showed that when students pursued personal goals for intrinsic reasons (e.g., out of personal interest) rather than for extrinsic reasons (e.g., to please others), their belief in nonlimited willpower increased (Sieber, Flückiger, Mata, Bernecker, & Job, 2019). The bottom line of this research is that implicit theories are at least to some extend "construed" from the experiences people make—a process that probably continues over the course of one's life.

Mechanisms: Implicit Theories Work in Meaning Systems

A considerable amount of research has been dedicated to the mechanisms underlying the effects of implicit theories. This work has shown that implicit theories work in so-called meaning systems (Hong et al., 1999; Molden & Dweck, 2006). That is, people formulate theory-consistent goals, and interpret the effort experienced and outcomes of their actions in line with their implicit theories. Further, based on their theories, they pursue different strategies to overcome difficulties. Together people's goals, effort beliefs, attributions, and strategies build a coherent system that allows a person to make sense of the world and make predictions based on this understanding. In the following, we are going to introduce the four mechanisms that underlie the effects of implicit theories within the achievement and interpersonal domain (i.e., goals, effort beliefs, attributions, and strategies).

Learning and Performance Goals

Implicit theories determine what kind of goals people set in achievement situations. People who believe that their attributes are malleable and open to change set so-called **learning goals** that are directed at the development of their abilities. People who believe that their attributes are fixed are on the other hand concerned with validating their level of ability. Accordingly, they tend to pursue so-called **performance goals**[2] (e.g., Robins &

[2]Performance goals are sometimes defined as competitive goals (wanting to outdo others) or as simply seeking successful outcomes (such as high grades). However, research shows that these other goals do not create the same vulnerabilities as the goal of validating ability (e.g., Grant & Dweck, 2003). Throughout this chapter we use the term performance goals to refer to the goal of validating ability.

Pals, 2002). The goals individuals strive for in turn shape their cognitions, affect, and behavior and can thereby lead to different learning outcomes (e.g., Dweck & Leggett, 1988; Elliott & Dweck, 1988). For instance, one study used electroencephalography (EEG) to monitor brain activity associated with students' attention to feedback while taking a challenging test (Mangels, Butterfield, Lamb, Good, & Dweck, 2006). Results showed that both entity and incremental theorists eagerly attended ability-relevant feedback about whether their answer to an item was correct or incorrect. However, compared to incremental theorists, entity theorists were less interested in learning-relevant information about what the correct answer was (Mangels et al., 2006, see also Dweck, Good, & Mangels, 2004). Once their performance goals had been met by processing the ability-relevant feedback about whether their answer was correct or not, entity theorists felt no need to attent to the learning-relevant information (Mangels et al., 2006). Other studies have suggested that learning goals are related to the use of more effective strategies in the face of difficulties (e.g., Elliott & Dweck, 1988), "deep" learning strategies to approach difficult course material (e.g., Grant & Dweck, 2003), and better performance in challenging tasks (e.g., Mueller & Dweck, 1998). Overall, research suggest that implicit theories generate different concerns of either *developing* one's ability or to *proof* that one possesses a certain level of ability.

Definition Box

Learning goals (also often referred to as "mastery goals") reflect individuals' concern with increasing their competence.

Performance goals reflect individuals' concern with demonstrating a high level of competence.

Importantly, goals are not only an important mechanism in the intellectual-achievement domain but also in the domain of interpersonal relationships. Rudolph (2010), for instance, showed that implicit theories about peer relationships (whether they are fixed or can be improved with effort) predict the types of goals people set in social situations. Students holding an entity theory were more likely to set *performance-oriented social goals* (which are concerned with minimizing the risk for social failure or negative social judgment) rather than *mastery-oriented social goals* (which involve learning and developing relationships; Rudolph, 2010).

Effort Beliefs

Implicit theories in the achievement-intellectual domain are related to people's beliefs about effort. Many motivational theories are based on the basic assumption that effort is aversive and people only engage in effortful activities if they regard it as being worthwhile, for instance, if they can achieve a valued outcome (e.g., Kurzban, Duckworth, Kable, & Myers, 2013; Rollett, 1987; Wright, 1996). In line with this theorizing, research on implicit theories demonstrates that the beliefs people hold about the malleability of intelligence changes the meaning of effort. People endorsing an incremental theory regard effort as necessary and worthwhile for change. As a result they embrace situations that yield a challenge to their abilities—they know that change will not come easy and that they have to invest effort to grow. The meaning of effort differs when seen through the lens of an entity theory: If a person has to invest high effort to accomplish a task this implies a lack of ability or at least an insufficiency and there is nothing to be done about it. Thus, an entity theory gives a negative spin to the experience of effort and, as a result, drives people away from challenging situations (e.g., Blackwell et al., 2007; Dweck & Leggett, 1988; Hong et al., 1999). To our knowledge, effort beliefs have so far not been studied as mechanism driving outcomes within the interpersonal domain.

Attributions

As mentioned above, implicit theories affect how people make sense of challenges such as setbacks or failure. An entity theory drives people to attribute failure to what they believe are stable characteristics such as ability or traits. In contrast, an incremental theory leads people to attribute failures and setbacks to malleable entities such as effort, motivation, or aspects of the situation. Research shows that these differences in attributions explain why implicit theories predict different affective and behavioral responses to failures and negative feedback. For instance, Hong et al. (1999) showed that when students received negative performance feedback, they tended to attribute it to a lack of effort if they endorsed an incremental theory about intelligence (both when measured and manipulated). Accordingly, they took remedial action. In contrast, students with an entity theory attributed the feedback to a lack of ability and were less likely to take action to elevate their performance (Hong et al., 1999).

Attributions also play an important role in individuals' reactions to social challenges, such as social exclusion or intergroup conflicts (e.g., Halperin & Bar-Tal, 2011; Yeager, Miu, Powers, & Dweck, 2013). Studies showed that entity theorists tend to attribute other's behavior to their personality (e.g., "She behaved like that because she is a bad person"), while incremental theorists tend to make more situational attributions (e.g., "She behaved like that because she was in a rush"). These differences in attributions triggered by implicit theories lead to differences in people's emotional (e.g., anger, hatred) and behavioral (e.g., revenge seeking) reactions to socially adverse situations.

Mastery-Oriented and Helpless Strategies

Implicit theories also predict how people respond to challenges: people with an incremental theory are persistent and invest effort to master challenges and overcome setbacks—they use so-called mastery-oriented strategies. In contrast, people with an entity theory become easily discouraged by setbacks and react with helpless or defensive strategies (Blackwell et al., 2007; Hong et al., 1999; Robins & Pals, 2002). If people believe that their abilities are fixed, setbacks mean that they lack certain ability. As a result they are less willing to invest effort in overcoming the situation and try to avoid challenges. If people believe that they can grow their abilities, setbacks are interpreted as opportunities to learn rather than in terms of personal insufficiency. The idea of growth takes away negative feelings toward the self to dwell about and replaces them with a "readiness to act." A longitudinal field study traced 500 college students over the course of their 4 years of college and found that students with an entity theory were more likely to report helpless-strategies (e.g., "When I fail to understand something, I become discouraged to the point of wanting to give up."), while students with an incremental theory were more likely to report mastery-oriented strategies (e.g., "When something I am studying is difficult, I try harder."; Robins & Pals, 2002). Further, entity theorists showed a drop in self-esteem over the course of their college years, speaking to the negative implications for the self that are associated with challenges and setbacks for these students (Robins & Pals, 2002). Other studies in the laboratory found that students with an (induced) entity theory engage in strategies that preserve their self-worth. For instance, they choose to review the work of others doing more poorly than themselves rather than learning from those doing better than themselves (Nussbaum & Dweck, 2008). They are also more likely to consider lying or cheating in order to look better (Blackwell et al., 2007; Mueller & Dweck, 1998).

In the interpersonal domain, research has studied how implicit theories shape how people respond to experiences of social adversity or failure. For instance, when being victimized by their peers, students holding an entity theory about personality tend to react with desire for vengeance and aggression. In contrast, students holding an incremental theory choose a more resilient-prosocial response. For example, they tried to be "cool" about an incidence of victimization and wanted to educate their transgressor

Table 12.2 Overview of mindset processes

	Implicit theory	Goal orientation	Effort beliefs	Attribution of adversity	Strategies in the face of adversity
Achievement domain	Entity theory	Learning goals	Effort as lack of ability	Lack of ability	Helpless/defensive responses
	Incremental theory	Performance goals	Effort as necessary for growth	Lack of effort	Mastery-oriented responses
Interpersonal Domain	Entity theory	Social-learning goals	(–)	Trait-based judgments	Prosocial-resilient responses
	Incremental theory	Social-performance goals	(–)	Situation-/process-based judgments	Punitive-aggressive responses

(Rudolph, 2010; Yeager & Dweck, 2012; Yeager, Trzesniewski, et al., 2013).

To sum up, implicit theories work in meaning systems and have motivational, emotional, and behavioral consequences on different levels. The two major domains—achievement and interpersonal—in which implicit theories have been studied largely align in the mechanisms that have been observed. Table 12.2 summarizes the main mechanisms studied for both domains. In both domains implicit theories are associated with different goals people set, they shape how adversity is interpreted, and which strategies people choose to deal with these adversities. Effort beliefs have been studied in the achievement domain only, although one could also imagine that people evaluate effort they experience within their relationships differently, if they endorse an entity versus incremental theory.

Box 12.3 Question for Elaboration

Why are implicit theories often referred to as working in a "meaning system," and what does the term describe?

Application of Mindset Theory in the Context of Interpersonal Aggression

In the previous sections, we have described the basic tenets of Mindset Theory. It proposes that people differ in their beliefs about the malleability of human attributes, such as intelligence and personality. We described research showing how these basic assumptions affect key outcomes in the intellectual-achievement domain and the interpersonal domain. In this last section of the chapter, we want to describe an intervention study that applied Mindset Theory to tackle the problem of **bullying**, which is present in schools (and workplaces) around the world. In a representative sample of $N = 15.686$ US students from sixth to tenth grade, 30% reported moderate to frequent involvement in bullying. Either they bullied themselves or they had been bullied (Nansel et al., 2001). Further, research shows that students who are victimized by their peers suffer in terms of psychological adjustment (e.g., depression, loneliness) and they are at higher risk of suicidality (e.g., Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Nansel et al., 2001; Rudolph, 2010). These findings call for the investigation of ways to reduce the prevalence of bullying and to help students cope with victimization by their peers.

Definition Box

Bullying is defined as a specific type of aggression in which a more powerful person (or group) is attacking a less powerful one repeatedly over time with the intention to do harm (Nansel et al., 2001).

Research suggests that applying Mindset Theory in this context might serve both purposes. Studies show that students' implicit theories about personality shape their emotional and

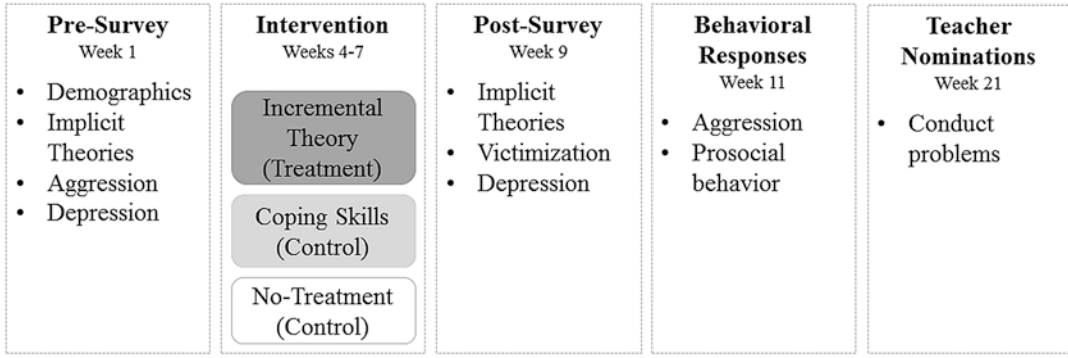

Fig. 12.1 Overview of the procedure of the intervention study, adapted from Yeager, Trzesniewski, et al. (2013)

behavioral response to experiences of victimization (Yeager & Dweck, 2012). When being insulted or excluded by their peers, students with an entity theory are more likely to desire vengeance and aggression (Yeager & Miu, 2011; Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011). Peer-victimized students also report more depressive symptoms, if they endorse an entity theory (Rudolph, 2010). For an entity theorist, victimization is done by "bullies," who will never change, to "losers," who will never change. This belief leaves victims of bullying hopeless about their own future, because they believe they will always be the ones being picked on. Moreover, it justifies a vengeful-aggressive response toward the perpetrators who are seen as "bad people". An incremental theory, on the other hand, implies that both victims and bullies can change, suggesting that they might get out of their role eventually. This perspective opens up the possibility of a more prosocial-resilient reaction to bullying, such as educating the perpetrators (Yeager & Dweck, 2012; Yeager et al., 2011; see also Yeager & Miu, 2011).

Building upon these findings, Yeager, Trzesniewski, et al. (2013) designed an intervention study targeting adolescents' implicit theories about personality in order to help them cope with social adversity in their everyday life. The study had a *pre-post control group design* with a treatment group, an active control group, and a no-treatment control group. The main hypotheses of the study were that an incremental theory intervention would (a) reduce aggression and increase prosocial behavior in response to an incidence of peer exclusion, (b) reduce conduct problems in school (i.e., aggression, acting out) and (c) reduce depressive symptoms among peer-victimized students (Yeager, Trzesniewski, et al., 2013).

The researchers randomly selected a medium-to-large size school from a list of 20 schools in the San Francisco Bay Area that fulfilled different criteria with regard to cultural diversity and social background. From the selected school, 246 students from ninth and tenth grade (14–16 years old) participated in the study (Yeager, Trzesniewski, et al., 2013).

An overview of the procedure is depicted in Fig. 12.1. Three weeks prior to and 2 weeks after, the intervention participants filled out surveys assessing some of the dependent variables (i.e., implicit theories about personality, aggression/victimization, depressive symptoms). Further, 1 month after the intervention, the researchers collected behavioral responses (i.e., aggression, prosocial behavior) to peer victimization among a balanced subset of 150 students. Last, 3 months after the intervention, 16 teachers reported observed reductions in conduct problems (e.g., acting out in class) among their students.

The intervention itself was administered in six sessions during students' biology classes. Students were randomly assigned to one of three conditions: the incremental theory group, the coping skill group, or the no-treatment group. Two teams of adult paid facilitators were trained

by the researchers to teach either the incremental theory workshop or the coping skill workshop. Facilitators were blind to hypotheses and post-intervention interviews revealed that all of them thought they were providing the target treatment. The workshops were designed to be parallel in many ways, for instance, with regard to materials and didactic methods applied.

Box 12.4 Questions for Elaboration

What purpose serves the active control group in an intervention study (the coping skill group in the example study)?

What might have been reasons for Yeager Trzesniewski, et al. (2013) to also include a no-treatment control group?

The incremental theory workshop covered three segments, each of them designed to teach one key message via different kinds of activities. In the first segment, students learned basic information about neuroanatomy and how the brain changes during learning. The second segment then focused on neural mechanisms that support the view that personality can change. The third segment focused on the translation of an incremental theory into participants' everyday life and covered the main message that people have different motivations for their actions (e.g., thoughts, feelings) which can also be changed. This last segment also corrected possible misconceptions (e.g., incremental theory does not suggest that people change all the time). The coping skill workshop was based on a widely used coping skill curriculum for high-school students (Frydenberg, 2010) and was shortened to parallel the incremental theory workshop. It was designed to be as enjoyable and engaging as the incremental theory workshop and used the same methods and in parts even provided the same information, for instance, information about neuroanatomy and how the brain learns.

To examine the effectiveness of the intervention, the researchers collected both self-report and behavioral measures. As behavioral measure of aggression in response to peer exclusion, Yeager et al. (2013) administered the "hot sauce paradigm," which had previously proven to be a valid measure of aggression in adolescents (Lieberman, Solomon, Greenberg, & McGregor, 1999). The testing was administered in group sessions by research assistances who were blind to condition and hypotheses. First, students played a video game called "Cyberball" (Williams, Cheung, & Choi, 2000), in which they experienced social exclusion. In this video game participants toss a ball together with two other players, who are supposedly controlled by two other students in the room. In fact, unknowingly, participants played with the computer program only. After being thrown the ball twice in the beginning, they are not thrown it again. This procedure typically produces negative feelings of being socially excluded. Afterwards participants were asked to take part in a supposed "taste testing" activity, in which their partner has to eat all the food (i.e., hot sauce) they assign to him/her. They also learn that they are coupled up with one of the players who had previously excluded them in the ball toss game and that this student dislikes spicy food. The measure of aggression is the amount of hot sauce they assign to their partner. As a measure of prosocial behavior, participants were asked to write a note that would be handed to their partner together with the hot sauce. These messages were later coded for levels of prosociality (e.g., apologizing for the hot sauce).

Results showed that, compared to both the no-treatment and the coping skill group, students who had received the incremental theory workshop assigned significantly less hot sauce and wrote more prosocial messages. Importantly, only the incremental theory workshop increased students' agreement with an incremental theory from before to after the workshop, suggesting that the difference between groups can be attributed to changes in incremental theory. Further, in the no-treatment group, students who reported being victims of bullying reported more depressive symptoms than non-victims. However, within *both* treatment groups, the number of depressive symptoms did not differ between victims and non-victims. This result suggests that

both workshops (incremental theory and coping skills) were effective in reducing the negative effect of bullying on students' psychological adjustment.

The study applied Mindset Theory, building on a large basis of studies suggesting that implicit theories play a crucial role in the response to victimization (Yeager & Dweck, 2012; Yeager & Miu, 2011; Yeager, Miu, et al., 2013; Yeager et al., 2011) and studies suggesting that implicit theories can be changed (Aronson, Fried, & Good, 2002; Yeager et al., 2011). Note, that the researchers applied Mindset Theory rigorously throughout the design of their study. For instance, they assessed victimization by peers, which later served as moderator of the effect of the workshop on depressive symptoms and conduct problems. This decision was based on the knowledge that implicit theories are most important in situations when people face difficulties (Blackwell et al., 2007; Dweck, 2012b; Hong et al., 1999; Sisk et al., 2019; Yeager & Dweck, 2012). Whether and how this intervention can be applied on a larger scale (e.g., in entire schools or school districts) is an interesting question for future research.

Summary

- Mindset Theory proposes that people hold different beliefs about whether people can or cannot change basic psychological attributes, such as their intelligence or personality.
- An incremental theory refers to the belief that people can substantially change with effort, while an entity theory refers to the belief that human attributes are fixed.
- Implicit theories affect important outcomes within the achievement and interpersonal domain (e.g., academic achievement, interpersonal aggression) via a set of cognitive and motivational processes that interact in a coherent "meaning system."
- Research identified four processes that drive effects of implicit theories: goal orientation, effort beliefs (only studied in the achievement domain), attributions of setbacks or social adversity, and behavioral strategies to respond to setbacks or social adversity.
- Intervention studies have applied Mindset Theory to the domain of interpersonal aggression and suggest that teaching adolescents an incremental theory about personality (i.e., the belief that people can change their personality) helps them to respond to social adversity (e.g., exclusion by peers) more adaptively (i.e., less aggression, less depressive symptoms).

Recommended Reading

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Guiding Answers to Questions in the Chapter

1. Question with Box 12.2: Can you think of other attributes that people might have implicit theories about?

   A: Research has identified many implicit theories, and not all of them are dealing with the malleability of an attribute but most are. Other examples of an implicit theory are implicit theories about passion as something to be found or developed (Chen, Ellsworth, & Schwarz, 2015; O'Keefe, Dweck, & Walton, 2018), implicit theories of romantic relationships as being characterized by romantic destiny or relationship growth (Knee, Nanayakkara, Vietor, Neighbors, & Patrick, 2001). Other examples are implicit theories of emotion regulation (Tamir, John, Srivastava, & Gross, 2007) and negotiation skills (Kray & Haselhuhn, 2007).

2. Question with Box 12.3: Why are implicit theories often referred to as working in a "meaning system," and what does the term describe?

   A: The term "meaning system" describes the multitude of processes that research identified as driving effects of implicit theories, such as goal setting, effort beliefs, attributions, and strategies people use in the face of adversity. These processes are not independent but rather linked with each other and together form a coherent system that allows the person to "make sense" of the world and make predictions based on this understanding. Depending on the implicit theory people hold, they formulate goals that make sense in their view (i.e., performance versus learning goals); they form coherent beliefs of effort (i.e., as signaling lack of ability versus conducive to change), attribute their setbacks in the accordance to their theory (i.e., as being due to lack of ability versus effort), and follow strategies that are in line with their belief (i.e., helpless versus mastery-oriented).

3. Question with Box 12.4: What purpose serves the active control group in an intervention study (the coping skill group in the example study)? What might have been reasons for Yeager, Trzesniewski et al. (2013) to also include a no-treatment control group?

   A: From a methodological point of view, an active control group helps researchers to determine whether changes in their targeted outcome are due to the specific intervention message (here an incremental theory about personality) and not only due to the fact that participants received any kind of treatment. From a practical viewpoint, having the active control group engage in a treatment that has been proven to be successful on the targeted outcome helps to compare the effectiveness of the intervention and therefore to determine which of the two is most effective (from an ethical standpoint, it is also better to provide the control group with some kind of effective, state-of-the-art treatment). No-treatment control groups are also often part of the design, because they help to control for other processes that might otherwise be overseen or even changed by the treatment (e.g., natural change in the outcome occurring over a period of time). Further, by only comparing two treatment groups, it is not possible to judge whether perhaps the control treatment made things worse in terms of the outcome or whether there was any effect (e.g., if both treatments have been equally effective).

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