



Decremental mindsets and prevention-focused motivation: An extended framework of implicit theories of intelligence



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ABSTRACT

Implicit theories are an influential framework for understanding achievement motivation. Many studies have shown that incremental (positive-change) beliefs predict adaptive motivation and positive learning outcomes, whereas entity (no-change) beliefs predict maladaptive motivation and negative learning outcomes. This research explores a new construct regarding decremental (negative-change) beliefs – mindsets that intelligence can be reduced. Two studies with a total of 407 university students showed that decremental beliefs were endorsed at a moderate level and were independent from entity and incremental beliefs. Different from entity and incremental beliefs, decremental beliefs were not associated with self-esteem but were uniquely associated with effort beliefs about ability loss (i.e., lack of effort leads to a decline in ability) and prevention-focused goal orientations (i.e., maintaining current ability). Furthermore, beliefs about change (i.e., original implicit theories items that did not indicate the direction of change) were strongly associated with incremental but not decremental beliefs, suggesting that the conventional methodology captures primarily beliefs about positive change. We discuss the importance of adding decremental beliefs to understand implicit theories and achievement motivation in a more comprehensive manner.

1. Introduction

People endorse different mindsets (or implicit theories) about whether human attributes (e.g., intelligence, language aptitude, and personality) are malleable. Among different domains of implicit theories, implicit theories of intelligence are particularly important in understanding students' motivation and achievement (Dweck, 1999). Many studies have shown that incremental beliefs (i.e., lay theories that intelligence can be improved) are more adaptive than entity beliefs (i.e., lay theories that intelligence is stable) in achievement contexts (Dweck & Leggett, 1988; Molden & Dweck, 2006). Specifically, students who hold strong entity beliefs tend to attribute failure to lack of talent, set goals that focus on performance, have lower self-esteem, and in turn avoid and give up more easily in challenging situations. In contrast, students who hold strong incremental beliefs tend to attribute failures to lack of effort, motivate themselves to make improvements, engage in challenging tasks, have higher self-esteem, and eventually achieve better performance (e.g., Dickhäuser, Dinger, Janke, Spinath, & Steinmayr, 2016; McCutchen, Jones, Carbonneau, & Mueller, 2016; for a meta-analysis, see Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013).

Despite its long tradition of research and important contributions, some researchers argue that the current framework of entity- versus-incremental beliefs might not capture the whole picture of change beliefs, thereby limiting its applications (e.g., Berg & Sternberg, 1992; Ziegler & Stoeger, 2010). Berg and Sternberg (1992) argued that “Dweck and colleagues assessed plasticity or modifiability of intelligence in only one direction, namely, that of increase, and did not assess beliefs regarding decreases in intelligence” (p. 228). This suggests that previous work on implicit theories may express change beliefs in a unidirectional manner by focusing on beliefs about growing (i.e., positive change) but not beliefs about declining (i.e., negative change). This research aims to address this concern. To this end, we proposed a theoretical extension of implicit theories by adding a new dimension, decremental beliefs (i.e., beliefs that intelligence can be reduced), and examined whether this construct is independent from the two implicit theories (i.e., entity and incremental beliefs) advocated in Dweck's model in an achievement context.

1.1. What do changes mean? Not only ups, but also downs

To understand the complexity of mindsets, we drew from the

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research on lay theories of change, which concerns people's beliefs, interpretation, and prediction about how events, people, and things change and develop in general (Ji, 2008; O'Brien & Kardas, 2016). Although conceptualized differently from mindsets, lay theories of change inform the theorizing of mindsets regarding beliefs about how specific human attributes (e.g., intelligence, will power, and personality) can be changed. That is, a person's interpretation and prediction about how things change in general may give rise to their more specific beliefs about what directions their own and other's characteristics can be changed.

In general, literature on lay theory of change suggests that lay people's views regarding changes in intelligence are more complex than a continuum from entity theories to incremental theories would indicate; most people hold beliefs about not only whether human attributes will change, but also about how they change (i.e., ups and downs; Berg & Sternberg, 1992; Ross, 1989; Sternberg, 1985; Ji, 2008). For example, many people believe that intelligence changes across the lifespan following an inverted U-shape: children and younger adults' intelligence grows while that of older adults declines. Similarly, many people can hold two seemingly contradictory beliefs about growth (in crystallized intelligence) and decline (in fluid intelligence; Berg & Sternberg, 1992; Bluck & Gluck, 2005). Such beliefs about multi-directional changes are in line with people's personal and vicarious experience with ability increase and decrease (Berg & Sternberg, 1985; Plaks & Stecher, 2007). In summary, people have access not only to incremental and entity beliefs, but also to decremental beliefs.

Although beliefs about negative change are commonly held among lay people, this concept is under-researched in the achievement motivation literature. One possible reason that the discourse about change beliefs has emphasized the positive direction is North Americans' cultural emphasis on self-enhancement and positive self-regard (Heine, Lehman, Markus, & Kitayama, 1999; Henrich, Heine, & Norenzayan, 2010). Research shows that North Americans are less self-critical and prevention-focused compared to East Asians (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Lockwood, Marshall, & Sadler, 2005). Although North Americans show stronger self-serving biases, they also posit a belief that positive characteristics can easily deteriorate, as well as a tendency to detect negative changes and losses (Norenzayan, Choi, & Nisbett, 2002; O'Brien & Klein, 2017). Therefore, we should not limit our understanding of the beliefs about negative changes to the cultural level; decremental beliefs, while they may vary across cultures, may be a universal tendency.

Another possible reason is that researchers may assume that beliefs about positive change and negative change are already covered by an overarching belief about change. Contrary to this view, we argue that beliefs about change assessed by the existing mindsets research capture primarily positive changes. Research shows that people tend to subjectively interpret their changes in a positive light when asked about their own changes (O'Brien & Kardas, 2016). For example, people recall more positive changes (e.g., I improved my foreign language ability this year) than negative changes (e.g., my foreign language ability is getting worse because I haven't practiced for a long time) when asked about how they have changed in the past, but not when asked about other people's changes. This tendency to see more positive changes in themselves reflects people's self-esteem and self-enhancement motives (Leary & Baumeister, 2000). From this perspective of lay theory of change, O'Brien and Kardas (2016) argued that the traditional method of measuring mindsets that asks participants about whether ability can be changed (e.g., "you can change your basic intelligence level considerably"), although the direction of change is not specified, may activate mainly their beliefs about positive change but not beliefs about negative change. This is not limited to lay people; many researchers also assume and interpret the original implicit theories items as beliefs about positive change.

Despite people's motivation to maintain a positive view about how they have changed, they are also more sensitive about negative changes

than positive changes (O'Brien & Klein, 2017). As such, people diagnose declines more quickly and view declines as more common than increases in their own and others' qualities, including academic ability. This asymmetry of tracking negative changes versus positive changes occur possibly because people assume that it is more plausible for positive qualities to become worse than for negative qualities to become better (O'Brien & Klein, 2017). These lay beliefs about decline reflect people's tendency to be alert to negative changes (i.e., loss aversion) and motivation to avoid negative consequences that dampen self-esteem (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001).

In summary, although people have self-serving biases towards positive change when asked about how their ability has changed in the past, they are also afraid of loss, sensitive about negative changes, and perceive decrease as more plausible than increase (see O'Brien & Klein, 2017 for a discussion). Previous literature suggests that beliefs about positive or negative changes may be based on different motivational drives and lead to different psychological processes. However, it is not clear how they these different beliefs are linked to motivation in the achievement context.

1.2. Decremental beliefs and achievement motivation

Implicit theories are important in the achievement context because they are considered to be the core beliefs in the "meaning system" that shapes individuals' meaning-making of their learning experience and in turn their learning motivation, emotion, and behaviours (Molden & Dweck, 2006; Plaks, Levy, & Dweck, 2009). In particular, Dweck and her colleagues argue that implicit theories influence students' achievement through their effort beliefs and goal orientations (Blackwell, Trzesniewski, & Dweck, 2007; Molden & Dweck, 2006). Given that negative change is also a common perception about human attributes, and linked to some fundamental motives of loss aversion and self-esteem protection, it is possible that decremental beliefs are part of the meaning system that guides students' motivation. People's beliefs about negative change may be elicited by the detection of their declining ability, and thus are related to negative-defensive motivation (e.g., use it or lose it). This prevention-focused motivation can potentially enrich our understanding of students' effort beliefs and goal orientations.

1.2.1. Decremental beliefs and effort beliefs

One underlying factor that links implicit theories and achievement outcomes is students' beliefs about effort (Blackwell et al., 2007). For example, Heine and his colleagues used a scenario to examine participants' effort beliefs about ability and found that incremental (vs. entity) participants expected a greater improvement when the target person in the scenario put more effort into studying, and, in turn, participants who expected a greater improvement persisted longer in challenging tasks (Heine et al., 2001). Incremental theorists are more persistent because they believe that working hard is an important and effective means of improving ability, whereas entity theorists expect that effort is ineffective in terms of improving ability and that working hard on a subject implies a lack of intelligence (Blackwell et al., 2007; Lou & Noels, 2016).

How are decremental beliefs linked to effort beliefs? We argue that decremental beliefs may link to effort beliefs about ability loss (e.g., if you don't practice enough, you will lose your ability). In other words, people who think their ability can decrease believe that lack of effort can aggravate the process. Although people tend to attribute the cause of decrease in their own and other's ability to lack of motivation and effort (Hertzog, McGuire, Horhota, & Jopp, 2010; Maurer, Barbeite, Weiss, & Lippstreu, 2008), we argue that students with stronger decremental beliefs will more strongly endorse effort beliefs about ability loss.

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