

**Motivational Mindsets about Change:
Integrating Lay Theories of Personal and Situational Malleability**

by

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DEDICATION

This is for the family who believed enough in me to let me go for eight years to pursue my dream of becoming a psychologist. Thank you for loving me so generously and supporting me so wholeheartedly.

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ABSTRACT

The study of lay theories focuses on understanding people’s fundamental beliefs, the interpretations of the world that they shape, and their regulatory consequences. Central to this scientific endeavor is the subject of stability and changeability—a cornerstone concept of human motivation (Weiner, 1985). Theories of attribute stability motivate self-validation through performance and dispositional judgments of others, whereas theories of attribute malleability facilitate change-directed efforts and expectations of improvement (Kammrath & Peetz, 2012; Molden & Dweck, 2006). Thus far, research has primarily focused on people’s beliefs about their personal attributes (“self theories”); comparatively less has elucidated the implications of people’s beliefs about the external world (“situation theories”). The goal of this dissertation is to expand our understanding of how self theories and situation theories work and to introduce a new theoretical framework that integrates them.

In Chapter 1, I introduce the lay theories of change literature and provide a general overview of the following chapters. In Chapter 2, I test an important boundary condition of previous self theory research: choice context. Four studies show that offering people the choice between persisting or quitting on an intellectual task replicates conventional lay theory differences in persistence, but these differences are eliminated when people’s choices are expanded to include switching problems. In Chapter 3, I examine the effects of people’s situation theories on behavior. Four studies show that construing situations as malleable rather than fixed galvanizes action to change unfavorable circumstances. In Chapter 4, I assess the implications of

lay theories about how people should interact with their environments to achieve their goals. When it comes to achieving passion for work, some people believe that they should find work compatible with their interests whereas others believe that it comes through cultivating competence. These two mindsets lead to different affective forecasts and choices, but both are similarly effective at attaining passion. Assimilating these and past findings in Chapter 5, I propose the “Self by Situation Change” (SSC) model as a heuristic framework that integrates self and situation theories. Finally, I wrap up the dissertation with future directions and concluding thoughts in Chapter 6.

CHAPTER 1

Introduction

When highly complex and confounding events like 2014's airplane tragedies occur, many people often jump in with explanations that betray their underlying assumptions, such as "terrorists are responsible for today's violence," and "accidents are bound to happen." We similarly observe this phenomenon with everyday, mundane events that contain their own perplexities, such as why some people are richer than others or why some students do better than others on exams. After all, it is instinctive in human nature to make meaning of the events that occur in their lives (Heider, 1958; Weiner, 1985). As Weiner (1992) argued, lay people and scientists alike "search for meaning in their environment, formulate hypotheses, and act on the basis of these belief systems" (p. 224).

The explanations that people conjure up to explain events often betray their fundamental assumptions about how the world works—or what psychologists term "lay theories" (Furnham, 1988). Lay theories are often referred to synonymously as "mindsets," "naïve theories," or "implicit theories." For example, many people believe that everyone gets their just desserts, that people are born with a certain level of IQ, or that people remain in poverty because they do not help themselves. Others believe that the world is not always fair, that people can develop their intelligence, and that we should blame disadvantageous social systems for perpetuating poverty.

Regardless of which theories people endorse, these “lay theories” form the mental context that they use to interpret their circumstances (Crum, 2012; Molden & Dweck, 2006). From a psychological perspective, these interpretive frames can powerfully influence how people react to events. Interpreting the world through the lens of different lay theories means that people can draw drastically different conclusions about the same targets and react in considerably different ways to the same circumstances (Ross & Nisbett, 2011).

For instance, marketing a type of wine as “highly popular” could either promote sales for the wine company or backfire, depending on the lay theory that consumers apply: High product popularity could be construed as desirable if consumers think that social consensus is indicative of a favored, good quality product; but it could be construed as undesirable if they rely on the lay theory that popularity reflects a lack of exclusivity, especially for high-end goods (Deval, Mantel, Kardes, & Posavac, 2013). Similarly, the value of an artwork can be swayed by the salience of different lay theories at the time of judgment. Only when a lay theory emphasizing artistic effort is applied does information about longer artistic investment boosts its perceived value. When a lay theory emphasizing artistic talent is salient, knowing that the artist invested a long time to craft the art piece has no impact on perceivers’ valuation of the artwork (Cho & Schwarz, 2008)—and might even backfire if people judge the artist as untalented.

Lay Theories of Change

Although there are many different types of lay theories, the lay theory literature has greatly emphasized people’s beliefs about the *stability or changeability* of characteristics. The importance of this dimension dates back to writings by early developmental psychologists, Piaget & Garcia. These psychologists identified two primary conceptions of the world—static

versus constantly changing—as fundamental worldviews that shape children’s interpretations and reactions (as cited in Dweck, Chiu, & Hong, 1995). Understanding which things are “amenable to personal control and which are likely to remain invariant in the face of attempted change” (p. 327) is crucial in human cognitive development (Dweck et al., 1995). This enables us to discern what we can or cannot expect to influence, and therefore how to interact effectively with our social worlds (Dweck et al., 1995).

In his seminal review article, Michael Ross (1989) emphasized this stability-change dimension by defining lay theories as “schemalike knowledge structures that include specific beliefs regarding the inherent stability of an attribute, as well as a set of general principles concerning the conditions likely to promote personal change or stability.” And understandably so—lay theories of change can be powerfully motivating, as abundant empirical research has found.

In the domain of education, for instance, students’ construals of their intelligence as fixed or malleable influence the way they deal with academic trials—and even predict their long-term achievement. When faced with difficulty, students with a theory that intelligence is malleable tend to show more emotional resilience and behavioral persistence, compared to those with a theory that intelligence is fixed and innate (Hong, Chiu, Dweck, Lin, & Wan, 1999; Dweck & Leggett, 1988). Over time, these behavioral and cognitive-affective differences add up to produce substantial disparities in academic achievement (Blackwell, Trzesniewski, & Dweck, 2007). We observe similar self-regulatory differences among those who hold fixed versus malleable theories of many other attributes, including: body weight, shyness, emotions, negotiation skills, leadership ability, relationships, and overall personality (e.g., Beer, 2002; Burnette, 2010; Erdley, Cain, Loomis, & Dweck, 1997; Hoyt, Burnette, & Innella, 2010; Knee,

1998; Kray & Haselhuhn, 2007; Tamir, John, Srivastava, & Gross, 2007). Across multiple domains, a malleably theory of attributes facilitates an orientation towards learning that seems to offer both short and long-term advantages over the achievement focus that a fixed theory promotes.

The Present Literature and its Emerging Future

At present, a great deal of research has focused on lay theories about personal attributes (“self theories”). A basic pattern of results has consistently emerged across multiple domains: when people believe that a particular aspect of themselves can be changed, they are more likely to work on cultivating and improving it. Recent research on lay theories, however, is attempting to go beyond further demonstrations that self theory effects extend to other personal attributes. This research is testing the boundary conditions of lay theory effects and their relations to other motivational constructs (e.g., Burnette, O’Boyle, VanEpps, Pollack, & Finkel, 2013; Leith, Ward, Giacomin, Landau, Ehrlinger, & Wilson, 2014). The goal of this dissertation is to build our understanding of how lay theories of change work and to offer new perspectives that enrich current theorizing. Each Chapter approaches the study of lay theories literature in an incremental manner, building up to a new theoretical framework in Chapter 5 that aims to contribute to scholarly advancement on lay theories of change. The next four Chapters progress according to the following logic:

- (1) understanding the context that self theories have been studied in (Chapter 2),
- (2) extending scholarship to people’s lay theories of situations (Chapter 3),
- (3) examining lay theories about how people should interact with their environments (Chapter 4), and

(4) integrating self and situation theories into a unified framework (Chapter 5).

Chapter 2: Putting Self Theories into Context

Malleable self theories powerfully motivate persistence among people who believe that their abilities are malleable, but hinder task perseverance among those who believe their abilities are fixed (Molden & Dweck, 2006). In Chapter 2, I argue that this pattern of results generally emerges in contexts where people are only given two ways of responding to setback: persisting at the same task or quitting it. However, differences in persistence are eliminated when people's responses to difficulty are expanded beyond this restricted dichotomy. Four studies demonstrate this boundary condition in action, illustrating that problem solvers' choice options under difficulty moderate conventional self theory effects.

Chapter 3: Empirical Evidence for the Motivational Implications of Situation Theories

Do people have lay theories about situational malleability like they do about personal attributes? Can we change the way people respond to events by altering their beliefs about situational malleability? In Chapter 3, I introduce the concept of "situation theories" and describe four studies which show that construing situations as generally malleable rather than fixed increases how likely people are to take action to improve their circumstances.

Chapter 4: Lay Theories about Person-Environment Interactions: Finding a Fit or Developing It

If people have lay theories about personal attributes and lay theories about their external circumstances, do they also hold beliefs about person-environment interactions? Using the domain of work to illustrate this possibility, I highlight in Chapter 4 that a majority of American

working adults believe in finding compatibility with their vocations, whereas a minority believe in developing themselves to meet the vocational demands. Four studies assessed the expectations, choices, and outcomes that are associated with each of these lay theories.

Chapter 5: Integrating Lay Theories of Personal and Situational Changeability: The Self by Situation Change Model of Lay Theories

In Chapter 5, I present a brief review of the self and situation theories literatures (including the studies in the previous Chapters), discuss their separate motivational implications, and propose a new theoretical framework to integrate these disjoint areas. This Chapter attempts to extend previous theorizing on lay theories of change by offering a theoretical perspective that I hope will prove heuristic and generative.

Chapter 6: Future Directions and Concluding Thoughts

In Chapter 6, I briefly discuss some future directions and end with concluding thoughts.

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CHAPTER 2

Putting Self Theories into Context

Abstract

In four studies, we examined how the choice alternatives available to problem solvers interact with their implicit theories of intelligence to produce differences in persistence. Past laboratory studies that restrict problem solvers' choices to continuing or quitting an activity find that, when faced with difficulty, entity theorists persist less and quit more than their incremental counterparts. We replicate these well-established differences with the standard dichotomous choice options in ongoing problem-solving tasks. Importantly, we show that these differences can be eliminated when problem solvers' options are expanded beyond this persist-quit dichotomy. Our findings converge on the conclusion that the "entity-quitters" and "incremental-persisters" dichotomy is conditional on a specific problem-solving context, and does not hold when problem solvers have other alternatives. These studies enrich our understanding of how our beliefs interact with the salient choice options to affect persistence, and suggest implications for helping those who are predisposed to quit under difficulty.

When Quitters Don't Quite Quit: Additional Choice Options Attenuate the Disadvantages of a Fixed Mindset

When confronted with a homework problem that we are stuck on, faced with an assignment that we cannot figure out, or told that we scored at the bottom of our class on an exam, many of us tend to consider two options at our immediate disposal: putting in more effort or giving up. In threatening situations such as these, whether we are predisposed towards one or the other response depends to a large extent on our beliefs about intelligence (Dweck, 2000; Hong, Chiu, Dweck, Lin, & Wan, 1999). Do these beliefs, however, produce the same motivational outcomes in achievement contexts where we have more than these two responses at our disposal? This research identifies and tests a previously unarticulated boundary condition of implicit theory effects: people's choices under difficulty.

Beliefs about Intelligence

Consider two students: one whose schedule is full of rigorous, demanding courses, who values personal development over grades, and who considers each challenge an opportunity to learn; another who favors easy classes that are gentle on one's grades, who maintains a stellar academic record with straight As, and who considers high effort indicative of low ability.

The first kind of mentality is that of a growth mindset. These people hold an "incremental theory of intelligence"—a theory that intelligence is malleable and can be developed through practice over time. This mindset inclines people towards learning and mastery, so that they tend to embrace challenge, persist in the face of obstacles, and relish the experience of accomplishing effortful tasks (Dweck, 1986, 2000; Hong, et al., 1999; Mueller & Dweck, 1998). Incremental theorists "tend to seek challenging learning opportunities and show resilience in the face of setbacks" (Dweck, 2012, p. 615).

In contrast, the second type of student exhibits a fixed mindset, which is associated with the belief that intelligence is a fixed, internal entity that does not significantly change over time. People with this “entity theory of intelligence” generally prioritize performing well over development. They tend to prefer easy tasks on which successes are attainable, “tend to avoid challenges for fear of showing themselves to be unintelligent... (and) show less resilience in the face of setbacks” (Dweck, 2012, p. 615). Entity theorists are more likely to perceive failure as a sign of their own inadequacy and withdraw from a task after negative performance feedback (Molden & Dweck, 2006).

In a nutshell, much past research has equated an incremental theory of intelligence with an adaptive response pattern associated with a learning orientation and behavioral persistence, but an entity theory of intelligence with a performance-orientation and a helpless response to failure (Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2000; Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988; Hong et al., 1999; Molden & Dweck, 2006). To date, few boundary conditions of these effects have been identified, which include ego threat and approach-avoidance forms of motivation (Burnette, O’Boyle, VanEpps, Pollack, & Finkel, 2013; Dweck, 2000; Hong et al., 1999). For example, Hong and colleagues (1999) argue that motivational differences between entity and incremental theorists “may matter most when individuals are faced with clear poor performance or the threat of it” (p. 597). Our research expands on these known moderators by identifying another important boundary condition of implicit theory of intelligence effects: choice responses under difficulty.

We propose that the motivational differences among incremental and entity theorists are likely to be more salient in achievement contexts where people have to choose between persisting at the same problem or leaving the task altogether. When people encounter difficulties

in these restricted choice contexts, beliefs that incline them towards learning would promote persistence and beliefs that incline them towards self-validation would make quitting more likely. However, in contexts where people's choices of dealing with difficulty are expanded beyond this persist-or-quit dichotomy—like when they additionally have the option to switch problems—these motivational differences would be attenuated.

Achievement Choice Contexts

Implicit theory of intelligence research has primarily been studied in academic achievement contexts and laboratory experiments that simulate intellectual activities. To a large extent, these contexts are often structurally fixed and restrictive, offering little in the way of choice repertoire to students who navigate them. Surveys of students in college classes reveal that, on average, they perceive their class systems as such: When we asked more than 500 students in psychology and statistics classes to rate how fixed or flexible their classes were (see Appendix 2.A for scales), students' average ratings fell significantly below the midpoint of the 6-point scales (psychology: $M = 2.41$, $SD = .90$, $t(434) = -24.96$, $p < .001$, $[-1.17, -1.00]$; statistics: $M = 2.72$, $SD = .93$, $t(137) = -9.93$, $p < .001$, $[-.94, -.63]$). These findings suggest that students perceive their class achievement contexts as generally unchangeable.

In these restrictive contexts, when faced with difficulties that question one's sense of competency, two ways of responding become apparent: putting in more effort or throwing in the towel. Mirroring the restricted choices that students have to respond to difficulty, a number of laboratory studies have dichotomized the choice between persistence and quitting on a task when people encounter setback. For example, Kamins and Dweck (1999, Study 1) asked children if they wanted to do the same puzzle again or something else; Hong and colleagues (1999, Study 3) gave participants the choice between taking a remedial tutorial on the same intellectual task or an

unrelated one; Mueller and Dweck (1998, Study 6) measured how likely or unlikely participants were to take home the same problems that they had tried earlier in the experiment. Given this choice, incremental theorists, who construe setbacks as learning opportunities, are more inclined to choose to continue trying; entity theorists, who view effort as negatively associated with ability, are more inclined to leave the task at hand (Molden & Dweck, 2006).

The empirical evidence supports these motivational differences between entity and incremental theorists when their choices are restricted to quitting or persisting: Given the choice between persisting on the same problem or quitting the task altogether, children with an incremental theory of intelligence reported greater intentions to try the same puzzle they had earlier role-played making a mistake on. In contrast, children with an entity theory were much less inclined to try the same puzzle again (Kamins & Dweck, 1999, Study 1). In another study on college students, 73.3% of incremental theorists chose to do a remedial tutorial on the same ability task after receiving poor performance feedback, compared to only 13.3% of entity theorists—most of whom preferred an unrelated task instead (Hong et al., 1999, Study 3). These findings support the observation that different implicit theories motivate persistence to different extents when people are asked to choose between persevering or quitting under difficulty.

But do these motivational differences between implicit theorists hold when people are no longer just comparing between the two options of persisting or quitting? What happens when people consider other ways of responding to difficulty? Greene and colleagues (2010) found that students who showed high levels of self-regulated learning did not show the usual relation between implicit theories of intelligence and learning outcomes. Self-regulation in students involves greater strategic awareness and flexibility in navigating their learning environments (Zimmerman & Pons, 1986). For those low in self-regulation, a more incremental theory was

associated with greater learning outcomes; but this effect was reduced to “almost zero” in those who were high in self-regulation (Greene, Costa, Robertson, Pan, & Deekens, 2010, p. 1036). Their findings suggest that people who actively strategize alternative ways of dealing with situational demands are buffered against the negative consequences of a fixed intelligence belief. Following this reasoning, the choice options that people perceive under difficulty should moderate differences in persistence between entity and incremental theorists. Expanding people’s choice options beyond the persist-or-quit dichotomy should, therefore, attenuate differences in persistence between theory groups.

We tested a simple manipulation of this by offering people the option to switch problem under difficulty in addition to the conventional persist and quit responses. Problem switching—moving from a problem that one cannot immediately solve to a different problem of the same type, or moving from one approach to another within the same complex problem—is a strategy that people commonly and often adaptively adopt to deal with difficulty. Think of a crossword puzzle. Upon encountering a very difficult word, we can keep trying to figure out that particular word, quit doing the crossword puzzle altogether, or switch to a different word in the same puzzle. These choices are also evident in other situations where the stakes are higher, such as when we take examinations. During an examination, we may persist on a difficult problem that we do not immediately have an answer to or move on to another problem on the exam. Thus persisting and quitting are not the only ways that people can respond to difficulty. In fact, a strategy like switching allows the problem solver to persist on the same general task even though not on the same specific problem. We predicted that, when given this greater flexibility in responding to setback, the classic differences in persistence between incremental and entity theorists would not emerge.

Overview

Four studies examined how the choice alternatives offered to problem solvers interact with their implicit theories of intelligence to affect persistence under difficulty. We hypothesized that the well-established “entity-quitters” and “incremental-persisters” dichotomy would replicate when problem solvers are offered only the options to persist or quit under difficulty, but these differences would not occur when the option to switch to a different problem is added. In our studies, we focused on ongoing problem-solving tasks, which recent research shows can similarly evoke intellectual threat like explicit negative feedback at the end of a task (O'Rourke, Haimovitz, Ballweber, Dweck, & Popović, 2014). Thus, the present research extends traditional implicit theory findings beyond achievement contexts with explicit performance feedback to ongoing problem-solving tasks.

Studies 1 and 2 tested how the choice options available to problem solvers interact with their implicit theories to affect task persistence. Study 1 examined participants' choices when encountering a highly challenging problem. Study 2 gave participants multiple problems of varying difficulty levels to try and measured their choices under difficulty, the total time they spent attempting problems, and the number of problems they attempted after experiencing setback. Studies 3 and 4 then studied the motivations behind participants' behaviors: Studies 3a and 3b clarified the difficulty levels and types of problems that participants chose to switch to. Study 4 examined whether the choice options given influenced participants' behavior directly or acted through their goals.

Study 1: Quit, Persist, or Switch?

Study 1 tested how the choice context interacts with implicit theories to affect persistence in the face of difficulty. In the standard paradigm, participants were asked to choose between

persisting and quitting (e.g. Hong et al., 1999; Kamins & Dweck, 1999; Mueller & Dweck, 1998). In these restricted choice contexts, entity theorists have been shown to persist less and to forgo learning opportunities in favor of quitting the activity, compared to their incremental counterparts. Do these behavioral differences also hold in an expanded choice context, where quitting, persisting, and switching problems are available options? We hypothesized that, when limited to the persist-or-quit choice options, entity theorists would be less likely to persist than incremental theorists; but when given expanded choice options, these behavioral differences would be attenuated.

We measured adults' implicit theories of intelligence and gave them two practice word problems before an unsolvable one. This unsolvable anagram, which was pretested to be experienced as a highly challenging problem, provided an intellectually challenging situation for everyone regardless of prior ability. Additionally, the experience of being unable to solve a problem simulates many real life ongoing problem-solving tasks, such as encountering a very difficult problem on an exam or homework assignment. In these situations, people have their own sense of self-efficacy and confidence in their ability to give a correct answer, and are aware when they are unable to do so (e.g., Hart, 1965; Miner & Reder, 1994). Thus this experience of intellectual difficulty served as an internal source of performance feedback on the ongoing problem-solving task, reproducing the intellectual threat often elicited more explicitly through post-task performance feedback (e.g., Hong et al., 1999; Mueller & Dweck, 1998). Here, we focused on participants' choices among quitting, persisting, and switching problems as an indication of their desire to persist on the same task when faced with difficulty.

Method

Two hundred and four adults (53.4% male, $M_{age} = 30.8$ years, age range = 18 to 66, Amazon Mechanical Turk; geographic location: USA) were given up to 1 hour to solve word problems¹. They were compensated US\$1.00 regardless of study completion and accuracy of answers. They were not told how many anagrams the experiment included, but were instructed that they could do as many or as few as they wanted.

Participants rated their agreement with four implicit theory of intelligence measures (e.g. “You can learn new things, but you can’t really change your basic intelligence;” 1 = *strongly agree* to 6 = *strongly disagree*; $\alpha = .96$; taken from Dweck, 2000) and how good they were at solving anagrams (1 = *Not sure what they are*; 8 = *Very good*). They were then instructed to attempt each of our anagrams by rearranging the letters provided to form a single new and valid word. Each letter was to be used only once. Participants were not told how many anagrams they would be given.

The experiment included 3 anagrams—two easy (“RETE” and “MODR”) and one impossible to solve (“DUIBALNBIEE”), presented in that order². The first two anagrams modeled easier practice questions or “success” problem sets in previous studies that generally preceded more difficult questions, and helped orient participants to the experimental task (e.g. Licht & Dweck, 1984; Mueller & Dweck, 1998). The impossible anagram had no solution, but was designed to mimic an extremely challenging, solvable anagram. A pretest showed that most

¹ Pretesting showed that most people tended to take between 15 to 20 minutes to complete the experiment, with a maximum duration of 40 min. Hence, 1 hour provided an ample amount of time for participants to complete the experiment.

² Possible correct solutions to “RETE” include “TREE”, “RETE”, and “REET” – 83.3% of answers were correct; the correct solution to “MODR” is “DORM” – 96.6% of answers were correct; there are no correct solutions to “DUIBALNBIEE” (created by scrambling letters in “INDUBITABLE” with an additional “E”).

people did not recognize that it was unsolvable, but rather, experienced it as highly challenging. This approach leveled any possible differences in answer accuracy and prior ability, and allowed us to directly measure people's intentions to persist or quit.

All participants received the same choice options on the first two practice anagrams, and were then randomly assigned to different choice context conditions for the third anagram. On each of the first two, they were presented with the anagram, and asked to pick one of the following responses: "Here's my answer! Continue on to the next question. [space for answer text]" or "Stop here, leave questionnaire." If participants chose the latter, they were directed to the end of the experiment to fill out demographic information before exiting the experiment.

All participants who attempted an answer on the first two were presented with the third anagram. On this anagram, participants were randomly assigned to either the restricted choice Quit-Persist (Q-P) condition or the expanded choice Quit-Persist-Switch (Q-P-S) condition. In the Q-P condition, the same choice options presented in the first two anagrams were shown, namely to answer the anagram or to stop. In the Q-P-S condition, participants were provided with an additional switch problems option, "Please switch me to a different anagram!" Participants' choice response on the impossible anagram constituted our main dependent variable.

After responding to the impossible anagram, participants who gave an answer to it were told that their answer was incorrect and those who chose the switch option received a message apologizing that there were currently no more anagrams available to try. After each anagram, participants rated its difficulty on a 1 (*Very Difficult*) – 7 (*Very Easy*) scale. Finally, all participants provided demographic information, and indicated whether they had tackled the anagrams alone or with others' help and whether they had worked on similar problems before.

Results

We excluded 2 participants who reported getting help from others, 1 who did not respond to attempting the anagrams alone, and 1 who suspected that the third anagram was unsolvable. Our results and significance levels remained the same as when all participants' data were included. On average, participants reported being “neither good nor bad” at anagrams ($M = 4.90$, $SD = 1.90$). There were no significant differences in pre-existing skill level between entity and incremental theorists, $M_e = 4.78$, $SD_e = 1.88$; $M_i = 4.93$, $SD_i = 1.90$, $p = .626$, $[-.73, .44]$, or choice option conditions, $M_e = 4.86$, $SD_e = 1.96$; $M_i = 4.90$, $SD_i = 1.84$, $p = .881$, $[-.57, .49]$. On average, participants reported little experience with similar tasks ($M = 2.27$, $SD = .64$). The results validated the difficulty levels of our anagrams: A repeated measures analysis of variance (ANOVA) showed that participants ranked the easy anagrams as significantly easier ($M_{Tree} = 5.47$, $SD_{Tree} = 1.76$; $M_{Dorm} = 5.82$, $SD_{Dorm} = 1.38$) than the impossible anagram ($M_{Impossible} = 1.23$, $SD_{Impossible} = .78$), Greenhouse-Geisser corrected $F(1.91, 375.34) = 882.12$, $p < .001$. There were no significant differences on the perceived difficulties of each of the anagrams between conditions (all $ps > .27$).

The four implicit theory of intelligence measures formed a reliable measure ($\alpha = .96$). In line with previous studies (Chiu, Hong, & Dweck, 1997; Dweck et al., 1995; Hong et al., 1999), we divided participants into those with clear entity and incremental theories. Entity theories included all those who averaged 3 and below on the 6-point measure; incremental theorists included all those who averaged 4 and above. Hence, 23 (11.5%) who scored between 3 and 4 were excluded from the theory groups. We obtained the same pattern of results when we used the continuous scales, but present them as dichotomous groups because we were primarily interested

in comparing people with clear entity and incremental theories, rather than including those who were undecided between the two.

We tested participants' responses to the difficulty experienced on the impossible anagram. Throughout our analyses, we report chi-square tests where appropriate and Fisher's exact tests when the chi-square assumptions of expected cell frequency of 5 or more were violated (as prescribed by Agresti & Finlay, 1997). Replicating past literature, entity theorists in the Q-P condition were more likely than not to quit in the face of difficulty, and more likely to do so than incremental theorists (78.8% entity versus 54.4% incremental), $\chi^2(1, N = 90) = 5.36, p = .021$. However, these differences were eliminated in the Q-P-S condition, $p = .835$. As shown in Table 2.1, entity and incremental theorists overwhelmingly chose the switch option (93.5% entity, 90.7% incremental), almost none chose to quit (0% entity, 3.7% incremental), and few chose to answer (6.5% entity, 5.6% incremental).

To directly compare quitting versus non-quitting, we collapsed answering and switching choices into a single "do not quit" measure on the impossible anagram for comparison. In the Q-P condition, entity theorists quit in significantly higher rates than incremental theorists, as described above (78.8% entity versus 54.4% incremental). In the Q-P-S condition, entity theorists no longer behaved like quitters. Rather, 100% of them chose not to quit, no different from the 96.3% of incremental theorists, $p = .531$. Hence, offering a switching option drastically decreased entity theorists' rates of quitting from 78.8% to 0%. There were no significant differences between implicit theory groups on the (logged) duration of persistence on the impossible anagram, perhaps because of a floor effect of persistence on a single short problem, $p = .414$. Thus, people's choices to persist, quit, or switch problem were more diagnostic of their motivational intentions in this study.

Discussion

Our results showed that conventional differences in persistence between entity and incremental theorists emerged when the problem afforded a choice between trying and quitting—but not otherwise. In the standard restricted choice context, those with an entity theory were more likely to give up than their incremental theory counterparts. However, in the expanded choice context, the “entity-quitters, incremental-persisters” dichotomy did not hold. In these cases, the majority of both types of theorists chose to switch to another problem of the same type, eliminating behavioral differences between the two groups. The pattern of results and significance levels replicated when the implicit theory measure was analyzed as a continuous scale. Our findings therefore suggest that the traditional finding is contingent upon a choice context restricted to persistence versus quitting in the face of difficulty.

Contrary to the possible argument that this anagram task is not comparable in intellectual importance or threat to intelligence tasks given to students, we replicated the conventional difference in persistence among entity and incremental theorists in the Q-P condition. This suggests that the way people respond to our challenging word problems is not necessarily very different from the way students are motivated under more explicit reminders of intellectual challenge when given the same choice options.

A limitation of Study 1 is that the small number of anagrams was not an ideal problem-solving context to study persistence from multiple angles. We did not find any differences between theory groups on duration of persistence on the impossible anagram, probably due a floor effect on this single problem. To address the limited ways that persistence had been measured, we included multiple problems of varying difficulty and additional behavioral measures of persistence in Study 2. We measured persistence through participants’ choices

(answer, quit, or switch) on a challenging problem, the total duration they spent on the task, and the total number of problems they attempted on their own initiative.

Study 2

We presented participants with multiple anagrams of varying difficulty to test whether the results of Study 1 would replicate under iterative problem conditions. We offered participants the same three anagrams as in Study 1, followed by up to 8 more of varying difficulty. Study 2's design enabled us to directly measure persistence with various behavioral measures, including participants' choices on the impossible anagram, how long they spent working on anagrams in total, and how many anagrams they attempted. We hypothesized that persistence is a function of an individual's implicit theory of intelligence and the choices that are available when attempting a problem. In the standard restricted choice between quitting or persisting, we predicted that entity theorists would be more likely to quit on a highly challenging problem, persist for a shorter duration on the task, and attempt fewer problems than incremental theorists. However, in the expanded choice condition with the option to switch, these differences in persistence and quitting would be eliminated.

Method

Three hundred and twenty-nine adults (56.8% male, $M_{age} = 30.4$ years, age range = 18 to 67, Amazon Turk, geographic location: USA) participated in our online experiment. We paid them a fixed rate of USD\$1.00 regardless of how many anagrams they tried and answered accurately. Participants were given a maximum of 3 hours to do as many or as few anagrams as they wanted, and were not told at any point that the experiment contained 11 anagrams in total so that we could measure how many problems they took the initiative to try.

As in Study 1, two easy practice anagrams were followed by an impossible one, which constituted the challenge situation of interest. On this impossible anagram, participants were randomly assigned to condition (Q-P or Q-P-S), which determined the choice options they saw for this and all subsequent anagrams attempted. Following this impossible anagram, there were 8 more of varying levels of pretested difficulty for participants to attempt if they wished. These anagrams are described in Table 2.2 in the order they were presented.

Those in the Q-P condition were given only the quit and persist choice options, whereas those in the Q-P-S condition were given the quit, persist, and switch choice options. Participants in the Q-P condition proceeded on to the next anagram when they gave an answer or were directed to the demographic survey at the end of the experiment when they chose to quit. In the Q-P-S condition, when participants gave an answer or chose to switch, they were directed to the next anagram available. Similarly, they were directed to the demographic survey at the end of the experiment when they chose to quit. After each anagram, participants rated its difficulty level on a 1 (*Very Difficult*) – 7 (*Very Easy*) scale, regardless of their response. The same demographic survey from Study 1 was included at the end of the experiment, including the questions about whether they had done the experiment alone and their level of previous experience with similar questions.

The participants were never told the actual difficulty of any anagram to mimic the unexpected difficulty of the next problem on a realistic test. They were not told the total number of anagrams available, so that we could measure how long they would spend and how many problems they were willing to attempt on their own initiative (our measures of persistence). The varying anagram difficulty levels tested how they responded to different degrees of challenge. This paradigm allowed us to measure persistent behavior in different ways.

Results

We excluded 8 people who reported getting help from others and 2 who suspected that the third anagram was unsolvable. We retained 319 participants' data for analysis. The pattern of results remained the same when all participants' data were included but we report results with these exclusion criteria because it is important that participants attempted the anagrams on their own during the experiment and did not suspect that the impossible anagram was unsolvable when trying it.

On average, participants reported being, "neither good nor bad" at anagrams ($M = 5.25$, $SD = 1.68$). This was neither significantly different between implicit theory groups, $p = .858$, $[-.37, .44]$, nor condition, $p = .48$, $[-.24, .51]$. In general, they reported little previous experience with similar questions ($M = 2.31$, $SD = .62$). Our manipulation checks validated the difficulty ratings of the anagrams used in this study, which we had previously established in pretests. As in Study 1 and previous research, we divided the participants into clear entity and incremental theory groups. Our pattern of results replicated when we repeated the analyses with the continuous measure of implicit theories of intelligence.

Responses to difficulty. As in Study 1, we first analyzed participants' choices on the impossible anagram immediately after the two practice ones. In the Q-P condition, entity theorists were likely to quit when faced with restricted choice options under challenge, and they were more likely to do so than incremental theorists (72.9% versus 55.3%), $\chi^2(1, N = 133) = 4.03$, $p = .045$. These results are consistent with well-established findings (e.g., Hong et al., 1999). However, in the Q-P-S condition, choice responses for entity and incremental theorists did not significantly differ, $p = .897$. The majority of both theory groups chose to switch (91.4% entity, 88.1% incremental), almost none chose to quit (1.7% entity, 2.4% incremental), and few

chose to answer (6.9% entity, 9.5% incremental). Hence, when given the additional choice of switching, entity and incremental theorists showed similar behavioral responses to difficulty, and were no more quitters than the latter. This replicates the key finding of Study 1.

Comparing the rates of quitting to non-quitting choices on the impossible anagram, we again found that entity theorists were significantly more likely than incremental theorists to quit in the Q-P condition (72.9% entity versus 55.3% incremental), but not in the Q-P-S condition (1.7% entity, 2.4% incremental), $p = 1.00$. Hence, differences in quitting rates found in the standard paradigm were eliminated when people's choice options were expanded beyond the quit-persist choice dichotomy.

Total duration of persistence. We summed up how long participants spent solving all anagrams they attempted after the first two practice ones to create a measure of total persistence. We normalized this duration measure by taking its log to the base 10. A univariate ANOVA showed an interaction effect of condition and implicit theory on (logged) total persistence, $F(1, 270) = 3.83, p = .051, \eta_p^2 = .014$ (see Figure 2.1). In the Q-P condition, simple effects analyses showed that incremental theorists ($M_i = 105.20$ s, $SD = 4.60$ s) persisted longer on anagrams overall than entity theorists ($M_e = 67.92$ s, $SD = 3.42$ s). This difference was marginally significant, $F(1, 270) = 3.76, p = .054, [-.38, .00]$. However, in the Q-P-S condition, differences in persistence were eliminated ($M_e = 137.40$ s, $SD = 2.80$ s; $M_i = 115.61$ s, $SD = 2.97$ s), $p = .424, [-.11, .26]$. Importantly, entity theorists' duration of persistence was significantly greater in the Q-P-S condition than in the Q-P condition, $F(1, 270) = 8.26, p = .004, [-.52, -.10]$; incremental theorists' duration of persistence was similarly high in both conditions, $p = .624, [-.21, .12]$. These persistence results support the pattern of choice responses, and suggest that

entity theorists are as persistent as their incremental counterparts when given the option to switch in the face of difficulty.

Number of problems attempted after difficulty. Past literature suggests that challenging experiences and negative performance feedback have significant implications for subsequent performance (e.g., Mueller & Dweck, 1998; O'Rourke et al., 2014). On this ongoing problem-solving task, we examined participants' problem-solving behaviors after they encountered their first impossible anagram.

After encountering difficulty, how many anagrams did entity and incremental theorists attempt, on average? In the Q-P condition, entity theorists attempted significantly fewer anagrams ($M_e = 3.23$, $SD = 1.64$) than incremental theorists ($M_i = 4.95$, $SD = 2.65$), $F(1, 270) = 4.44$, $p = .036$, $[-3.32, -.11]$. However, in the Q-P-S condition, entity theorists attempted as many anagrams ($M_e = 6.39$, $SD = 2.62$) as their incremental counterparts ($M_i = 6.59$, $SD = 2.53$), $p = .649$, $[-1.06, .66]$. Hence, even on the number of anagrams attempted, differences in persistence among entity and incremental theorists in the Q-P condition were eliminated when an additional switching option was offered. Both the main effects of condition, $F(1, 186) = 26.88$, $p < .001$, $\eta_p^2 = .126$, and implicit theory, $F(1, 186) = 4.30$, $p = .040$, $\eta_p^2 = .023$, were significant, but the interaction was not, $p = .102^3$ (see Figure 2.2). This is because the additional switching option significantly increased the number of problems that both entity theorists, $F(1, 186) = 16.39$, $p < .001$, $[1.62, 4.69]$, and incremental theorists tried, $F(1, 186) = 10.84$, $p < .01$, $[-.66, 2.62]$, attenuating behavioral differences in persistence.

³ We report analyses with participants who did not continue after the first impossible anagram coded as system missing values for this analyses. Repeating the analyses with these coded as "0"s yielded the same pattern of results.

Was the number of anagrams that participants attempted affected by the self-selection of participants who chose to continue past the impossible anagram? To account for the non-random subset (70.4%) of participants who chose to continue past the first impossible anagram, we conducted Heckman sample selection modeling using full maximum likelihood with Stata version 13.1. This method allowed us to simultaneously model what factors predicted whether participants continued past the impossible anagram or not (selection step), and if they did, how many anagrams they chose to attempt (outcome step).

Our results are summarized in Table 2.3. In the selection step, which measured participants' likelihood of continuing after the impossible anagram (rather than stopping at this anagram), only choice condition was significant, $z = 8.68, p < .001, [.94, 1.49]$. There was neither a significant Implicit Theory X Condition interaction ($p = .237, [-.44, .11]$) nor a main effect of implicit theory ($p = .566, [-.19, .35]$). Thus, having an additional switching problems option significantly increased the likelihood that participants chose to continue past the impossible anagram, regardless of their implicit theory. Controlling for the self-selection of participants who did continue after the impossible anagram, we found that implicit theory, $z = 2.20, p = .028, [.06, 1.00]$, and condition, $z = 2.81, p = .005, [.46, 2.57]$, significantly predicted the number of anagrams people chose to attempt in the outcome step. The interaction term was not significant ($p = .074, [-.91, .04]$). These Heckman outcome step results replicated our earlier analyses, in which we found significant main effects of implicit theory and condition, but no significant interaction.

Additionally, we broke down these persistence results by anagram and present the proportions of entity and incremental theorists who attempted each anagram after the impossible one (Table 2.4). As shown in the top panel of Table 2.4, there were higher percentages of

incremental theorists than entity theorists attempting every anagram following the impossible one in the Q-P condition. However, as shown in the bottom panel, there were no significant differences in the Q-P-S condition. Furthermore, this pattern of results held when we compared the proportions of entity and incremental theorists who persisted to the last anagram. In the Q-P condition, a significantly higher percentage of incremental theorists persisted to the last anagram (7.6% incremental theorists versus 0% entity theorists). These differences were eliminated in the Q-P-S condition, where equal percentages of entity and incremental theorists persisted to the last anagram (35.1% incremental theorists versus 36.1% entity theorists).

Overall, relative to the Q-P condition, higher percentages of entity and incremental theorists tried more anagrams in the Q-P-S condition. Remember that both also persisted for a longer duration on average in the Q-P-S condition. These results suggest two things: First, switching problems may be an adaptive strategy that enhances task persistence, rather than providing an easy “out;” second, entity theorists are as willing to persist doing the same kind of problems as their incremental counterparts if given the chance to switch problems.

Accuracy. Table 2.5 shows that there were no significant differences in accuracy. For all those who attempted any solvable anagrams, the proportion of entity and incremental theorists who answered them correctly were the same across both conditions. These results are valuable for two reasons: First, they suggest that for this particular anagram task, it is the presence or absence of an *attempt* that is more indicative of persistence. Second, they rule out an alternative explanation of our effects that entity theorists are less willing to write down an answer they think is incorrect (whereas incremental theorists are more willing to try an answer they are not sure of). If that were the case, we would expect entity theorists’ accuracy rates to be significantly higher across the board.

Discussion

Study 2 replicated and extended Study 1's results: when given the standard restricted choice between persisting or quitting, entity theorists were more likely to quit, and to quit in higher proportions than incremental theorists. Merely offering the additional option to switch, however, equalized persistence and quitting behavioral responses to difficulty. This was consistently found across multiple measures of persistence, including the choice to continue, the amount of time spent solving problems, and the total number of problems attempted. Hence, both studies suggest that the standard differences in persistence are contingent upon restricted choice conditions.

Since past literature have shown that people's implicit theories give meaning to their experiences (Dweck & Leggett, 1988; Molden & Dweck, 2006), some readers may wonder if entity and incremental theorists construe switching in different ways. Do entity theorists see switching as a means to leave the field in a more socially desirable manner than quitting, whereas incremental theorists see switching as an opportunity to get more practice? Study 2's results suggest otherwise. In fact, when given the option to switch, both entity and incremental theorists persisted to the same extent over multiple problems and achieved similar accuracies on the solvable problems. Hence, entity theorists are as inclined towards persistence on the same types of problems as incremental theorists under the right contextual conditions.

Nonetheless, two questions about their intentions behind switching remain: First, do entity and incremental theorists intend to persist on the same task when switching problems, or are they using switching as an opportunity to leave the current task? If they are motivated to persist on the same task, they would choose to switch to another problem of the same type. However, if they perceive switching as a more socially desirable way to leave the current task,

they might be motivated to switch to a different ability task instead. To address this, Study 3a offered participants a choice between problems of the same type and problems of a different type to switch to. The second question is whether entity and incremental theorists hope to switch to problems of different difficulty levels, reflecting possibly different expectations when switching. Study 3b assessed the difficulty levels of the problems that participants chose to switch to.

Study 3a: Switching Within or Between Problem Types

This study examined whether entity and incremental theorists intended to switch *within* the same problem type or *between* problem types by opting for the switch option. Switching *within* problem type (i.e. to another anagram) reflects the motive to gain another practice opportunity. Switching *between* problem types, however, could be construed as an alternative means of quitting the task. This latter option would remove the source of difficulty through a more socially acceptable choice than quitting outright, and at the same time, give the chooser another achievement opportunity in a different intellectual domain. This design thus allowed us to examine participants' motivations behind their switching behavior.

Method

One hundred and one adults (50.5% male, $M_{age} = 30.9$ years, age range = 18 to 70, Amazon Turk, geographic location: USA) participated in our online experiment. They were given up to an hour to complete the experiment. The procedure was the same as in Study 1, except on the third impossible anagram where all participants were presented with the following 4 choice options: (1) answer, (2) quit, (3) switch *within* problem type (“Please switch me to a different anagram to try.”), or (4) switch *between* problem types (“Please switch me to another type of verbal reasoning question instead of anagrams to try.”). At the end of the experiment,

participants provided demographic information and indicated whether they had attempted the anagrams alone or not.

Results

We excluded 2 participants who had not attempted the anagrams on their own and 1 participant who expressed suspicion about the solvability of the impossible anagram. Results and significances remained the same. Difficulty ratings replicated those of Study 1, such that the first easy anagram ($M_{Tree} = 5.35$, $SD_{Tree} = 1.90$) and second easy anagram ($M_{Dorm} = 5.93$, $SD_{Dorm} = 1.34$) were rated as significantly easier than the third impossible anagram, ($M_{Impossible} = 1.39$, $SD_{Impossible} = .82$), $F(2, 188) = 342.22$, $p < .001$. On average, participants' ratings of how good they were at solving anagrams ($M = 5.24$, $SD = 1.87$) and their previous experience with similar questions ($M = 2.23$, $SD = .64$) were similar to that in the previous studies. Theory groups were constructed as in previous studies.

As shown in Figure 2.3, the pattern of choices was similar for both entity and incremental theorists, $p = .229$. Both theory groups overwhelmingly preferred switching *within* problem type (86.7% entity, 69.2% incremental) over switching *between* problem type (3.3% entity, 17.3% incremental), attempting an answer (6.7% entity, 9.6% incremental), and quitting (3.3% entity, 3.8% incremental).

Discussion

These results replicate our findings in the Q-P-S conditions in Studies 1 and 2. Our findings offer a new interpretation of entity theorists' quitting behaviors in light of previous research: entity theorists may be quicker to walk away from a particular problem when they face difficulty with it—but may not necessarily want to quit the type of task altogether. Instead, they show a certain incremental quality about their desire to continue on the same type of task despite

giving up on the current problem. That is, if they are given the choice to switch problems rather than only the restricted options to keep trying the same problem or quit. These results support our argument that entity theorists choose to persist as much as incremental theorists on an ongoing problem-solving task when offered expanded choice options.

Study 3b: Switching Difficulty

In choosing to switch to the same type of problem, were entity and incremental theorists hoping for an easier, equally difficult, or more challenging anagram? By offering participants the options to answer, quit, or switch to any of these anagrams upon encountering the impossible one, we tested whether entity and incremental theorists were motivated by different expectations in their choice to switch problems.

Method

One hundred and two adults (68.6% male, $M_{age} = 29.4$ years, age range = 18 to 57, Amazon Turk, geographic location: USA) participated in our online experiment. They were given up to an hour to complete the experiment. The procedure was the same as in Study 1, except on the third impossible anagram where all participants were presented with 5 choice options: (1) answer, (2) quit, (3) switch to an *easier* anagram (“Please switch me to another easier anagram to try.”), (4) switch an *equally difficult* anagram (“Please switch me to another anagram of equal difficulty to try.”), or (5) switch to a *more difficult* anagram (“Please switch me to another more difficult anagram to try.”). After making their choice, they were asked to give an open-ended reason for it. At the end, they answered demographic questions and indicated whether they had attempted the questions alone or not.

Results

We excluded 1 participant who did not complete the anagrams alone and 5 participants who expressed suspicion about the solvability of the impossible anagram. Results and significances remained the same. Difficulty ratings replicated those of Study 1, such that the first easy anagram ($M_{Tree} = 5.71$, $SD_{Tree} = 1.55$) and second easy anagram ($M_{Dorm} = 5.59$, $SD_{Dorm} = 1.49$) were rated as significantly easier than the third impossible anagram, ($M_{Impossible} = 1.41$, $SD_{Impossible} = .86$), $F(2, 178) = 414.01$, $p < .001$. On average, participants' ratings of how good they were at solving anagrams ($M = 5.55$, $SD = 1.70$) and their previous experience with similar questions ($M = 2.39$, $SD = .62$) were similar to that in the previous studies. Theory groups were constructed as in previous studies. Out of all the participants who clearly held one of the two implicit theories of intelligence, 83 (32 entity, 51 incremental) submitted a choice response on the impossible anagram, and gave an explanation for their choice. We present their responses here.

Choice responses. As shown in Figure 2.4, the pattern of choice responses was not significantly different among entity and incremental theorists, $p = .267$. Replicating our previous studies, a majority of both theory group members chose one of the switching options (81.2% entity, 92.2% incremental) rather than to answer (6.3% entity, 5.9% incremental) or quit (12.5% entity, 2.0% incremental). Most tended to switch to an easier problem, regardless of implicit theory (65.6% entity, 76.5% incremental).

Reasons behind choices. Those who quit (6.0%, $N = 5$) mostly cited the anagram as being too difficult (1 entity, 1 incremental, e.g., "It was way too hard"), or not worth the effort (2 entity, e.g., "I couldn't be bothered figuring it out."). The few participants who attempted an

answer (6.0%, N = 5) thought their answer was correct (2 entity, 1 incremental, e.g., “I thought I knew what the anagram was.”).

Importantly, the reasons given for switching to an easier or an equally difficult anagram were similar across both theory groups. Easier anagrams were chosen (72.3%, N = 60) mostly because they recognized their inability to solve the current one (13 entity, 28 incremental, e.g., “I could not find an answer for that anagram” and “Because I could not solve it.”). A few recognized that a long time would be required to solve the anagram and that it was not worth their time (3 entity, 2 incremental, e.g., “I thought it would take a very long time to solve.”), and others wanted more anagrams or were not ready to quit yet (2 entity, 3 incremental, e.g., “I want to do more anagrams but could not figure out that one.”). These reasons suggest that participants had rational reasons for choosing an easier anagram.

Those requesting an equally difficult anagram (13.3%, N = 11) wanted to try another one (4 entity, 2 incremental, e.g., “I wanted to try another word.”), felt that they could not solve it (4 incremental, e.g., “I couldn’t figure out the previous anagram.”), or made a reference to testing their intelligence (3 entity, e.g., “I feel like I’m a relatively intelligent person and feel that I could try another one of the same difficulty.” and “I would like to see if it was my skill level that was not up to par, or that one word that was tricky.”).

Only two incremental theorists chose a more difficult anagram (2.4%) next, citing the desire for further challenge (e.g., “I couldn’t solve that one but I want to be challenged”). Note that some of their responses overlapped with more than one category or did not fall into any of these primary categories that emerged. We report the numbers that fell into any of the categories regardless of overlap.

Discussion

We again found that, when given the choice, the majority of entity and incremental theorists chose to switch to another anagram. In fact, most participants from both theory groups chose to switch to an easier anagram for rational reasons. Because switching problem was a choice that even the learning-oriented incremental theorists favored, it may not constitute a risk-averse move that only entity theorists with low confidence in their abilities choose. Rather than indicate a sign of weakness, switching problem appears to be a common and rational behavioral response in the face of insurmountable challenge.

In fact, choosing an easier problem to tackle after failure is an adaptive behavioral reaction to the recognition that the previous task was beyond one's means – as we read in their responses. An easier problem allows one to practice before attempting more difficult ones and to recoup one's sense of accomplishment after a failure, satisfying potentially different goals that entity and incremental theorists might hold. Therefore, switching problem in the face of experienced difficulty may prove to be not only a highly adaptive, but also very strategic response that is chosen by both theory groups.

Study 4: Goals for Switching

On various indices of persistence, entity theorists can be as persistent as incremental theorists when given the option to switch problems in the face of difficulty (Studies 1 – 3). Furthermore, entity and incremental theorists show no differences in the types of questions or the difficulty level of problems they want to switch to (Study 3). A question that remains is: Does changing people's response choices under difficulty affect their persistence behavior *directly* or *through their goals*?

Previous literature proposes that entity theorists primarily hold performance goals, whereas incremental theorists tend to hold learning goals (Dweck & Leggett, 1988). Believing that one's intelligence is innate and fixed makes each experience of difficulty an indication that one is inherently unintelligent in that domain. Thus, entity theorists are primarily driven to prove themselves as smart through high achievement. In contrast, believing that intelligence can be cultivated through practice turns each experience of difficulty into a self-developmental opportunity. Hence, incremental theorists are primarily driven by a learning motive. In this study, we adapted the standard task choice paradigm (see Dweck, 2000) to test participants' goals behind their switching behavior.

While this is an open empirical question, there are two important outcomes that could emerge: significant differences in entity and incremental theorists' goals consistent with prior literature would suggest that offering a switching option changes participants' behavior but not their goals; no differences would indicate that the switching option changes participants' behavior through modifying their goals.

Method

Ninety-four adults (54.3% male, $M_{age} = 31.6$ years, age range = 18 to 68, Amazon Turk, geographic location: USA) participated in our online experiment. They were given up to an hour to complete the experiment. Participants filled out the implicit theory of intelligence measures and then attempted the same impossible anagram administered in Study 1. To rule out the possibility that the novelty of the switching problems option on the impossible anagram drives participants' choices, we immediately began this experiment with the impossible anagram and offered everyone all three choices: (1) answer, (2) quit, (3) switch to another anagram.

Participants who chose the switch option were then asked to choose what type of anagram they would like next – a procedure adapted from previous studies that measured goal orientation (Dweck, 2000; Dweck & Leggett, 1988; Mueller & Dweck, 1998). They were given four options to choose one from, two of which reflected a performance orientation and two of which reflected a learning orientation, presented in alternate order. The performance-oriented choices included “A problem that isn’t too hard so that I won’t get it wrong.” and “A problem that is easy, so that I will get it right.” The learning-oriented choices included “A problem that I can learn from doing, even though I won’t look smart.” and “A problem that will give me more practice, so that I can master anagram solving.” After this, they answered the question “How many more anagrams would you like to try?” At the end, they filled out demographic questions and indicated whether they had attempted the anagrams alone or not.

Results

We excluded 2 participants who did not attempt the anagrams alone and 8 who expressed suspicion. 85 participants’ data were used in the analysis. The pattern of results remained the same even when they were included. As in previous studies, a similarly large majority of both entity (92.3%) and incremental theorists (72.9%) chose to switch to another anagram after the impossible one, $p = .142$. Even without the two practice anagrams, most participants chose to switch problems. This showed that the high proportions of switching observed in previous studies were not necessarily driven by the novelty of the switching option.

We combined the performance-oriented choices and learning-oriented choices into two separate categories. Replicating what past literature might predict, 54.2% of entity theorists chose to switch for performance-oriented reasons relative to 28.6% of incremental theorists, but 71.4% of incremental theorists chose to switch for learning-oriented reasons relative to 45.8% of

entity theorists, $\chi^2(1) = 3.92, p = .048$. We found that after switching, both entity and incremental theorists wanted to try similar numbers of additional anagrams, as we had found in Study 2 ($M_e = 3.77, SD = 2.39, M_i = 3.52, SD = 2.51$), $p = .681$.

Our findings showed that more entity than incremental theorists were driven by performance goals, and more incremental than entity theorists by learning goals, replicating previous literature. Despite their different goals, entity and incremental theorists still exhibited similar switching problem behaviors. Clearly this distinction in past literature is meaningful, although it is useful to note is that there was quite a significant proportion (about half in this case) of entity theorists who held learning goals. This high proportion can also be observed in previous studies (for example, Mueller & Dweck, 1998, Studies 1-3). In conclusion, choice options directly influence the effect of implicit theories on persistence behavior, without changing the people's goals.

General Discussion

Taken together, our findings show that task persistence is a joint function of people's implicit theories of intelligence and the response alternatives available to them. Prior studies that offer people the restricted choice between continuing an activity or quitting reliably find that, when faced with difficulty, entity theorists persist less and quit more than incremental theorists (Hong et al., 1999; Kamins & Dweck, 1999). In our studies, we replicate these well-established differences with the standard choice dichotomy on ongoing problem-solving tasks. However, merely adding the option of switching problems eliminates this motivational dichotomy: It significantly increases task persistence and reduces quitting in entity theorists to a level on par with their incremental counterparts. Our studies contribute to the implicit theories of intelligence literature by: (1) identifying an important contextual moderator of belief-driven differences in

persistence, and (2) examining behavioral persistence on ongoing, self-monitored problem solving tasks without explicit feedback.

Across our studies, expanding the choices that people have under difficulty to include switching problems changes their levels of task persistence in important ways, especially for entity theorists. First, significantly more entity theorists chose to try more problems of the same type rather than quit when given the chance (Studies 1 – 4). Second, they dedicated more time to working on problems—no different, in fact, from their learning-oriented incremental counterparts (Study 2). Third, a greater proportion of entity theorists took the initiative to work on more problems of the same kind despite previous insurmountable difficulty (Study 2). Fourth, contrary to the characterization of entity theorists as “quitters” and “nonlearners” (Dweck, 2000), these people requested more problems of the *same type* even when given the chance to quit or switch to a different activity (Studies 3 & 4). Overall, these results converge on the conclusion that the dichotomy of “entity-quitters” versus “incremental-persisters” is conditional on a specific problem-solving context, and can be attenuated by expanding problem solvers’ response alternatives beyond these restricted choice options.

Just as an entity theory is not *always* synonymous with “quitting,” an incremental theory may only be superior to the extent that the context promotes it. Previous theorizing acknowledges the context-dependent nature of implicit theories. For example, these individual differences tend to manifest most under intellectual threat (Burnette, O’Boyle, VanEpps, Pollack, & Finkel, 2013). Our studies show how a previously unrecognized albeit important contextual factor— response choices—can moderate these implicit theory differences in people’s persistence behaviors under threat.

By introducing this moderator of persistence, our findings may add perspective to some inconsistent results observed in field studies. On one hand, some field studies show that an incremental theory is academically advantageous (Aronson, Fried, & Good, 2002; Blackwell et al., 2007; Faria, 1996; Good, Aronson, & Inzlicht, 2003; Henderson & Dweck, 1990). For example, in a study of seventh-grade students going through the challenging middle to high school transition, Henderson and Dweck (1990) found that those with an entity theory were more likely to experience decreases in grades, compared to those with an incremental theory, who were more likely to experience achievement gains. This pattern of results is especially evident in field intervention studies which induced an incremental theory of intelligence. For instance, teaching people that intelligence can be increased through effort bolstered them from declining grades in junior high school (Blackwell et al., 2007) and from stereotype threat effects on performance (Aronson et al., 2002; Good et al., 2003).

On the other hand, sometimes an incremental theory does not lead to long-term advantages (Dupeyrat & Marine, 2005; Robins & Pals, 2002; Stipek & Gralinski, 1996). For example, no significant differences were found between entity and incremental students' high school GPAs, college cumulative GPAs, or adult returning students' year-end achievement scores (Dupeyrat & Marine, 2005; Robins & Pals, 2002). Robins and Pals (2002) observed that entity theorists actually had higher SAT scores when entering college. Moreover, entity-related beliefs but not effort beliefs significantly predicted grades and performance on standardized achievement tests in children grades 3 to 6 (Stipek & Gralinski, 1996). One explanation for the contradictory findings is that significant performance differences may only emerge after repeated setbacks, but may be attenuated if progress has ups and downs, producing variable reinforcement (Robins & Pals, 2002; Stipek & Gralinski, 1996). Our findings further suggest that the degree to

which people perceive choices in the environment, and how they use these choice alternatives, can also contribute to these inconsistent findings.

From entity theorists' perspective, the motivation to perform well in a domain of importance is generally salient (Dweck, 2000 & Study 4). When they face a problem beyond their current ability, they quit the task when they have to choose between that and continuing, but switch to another problem when they can. Thus it is not that expanding their choice options under challenge changes their motivation per se, but rather, the standard choice dichotomy might limit their capability to behave in line with their performance goal. How then can we change the context to increase persistence among naturally predisposed “quitters?” Our studies offer one possible solution: expanding problem solvers' salient choice options (such as including the option to switch problems). This offers a simple way of eliminating discrepancies in persistence under threatening situations even without changing people's beliefs or goal orientations. Another way to do this might be to change people's construals of how restrictive their achievement contexts are—an idea that future research can test.

In everyday life, we often perceive two ways of responding to problematic contexts that threaten our sense of self-worth. This persist-or-quit dichotomy restricts the way we respond, thereby accentuating individual differences in our beliefs about ability. Our studies show that expanding these choice options to include switching problems eliminates the negative behavioral consequences of these beliefs on ongoing tasks. These findings offer an easily implementable alternative to improving persistence among those who are predisposed to quit upon encountering difficulty.

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Table 2.1

Study 1: Percentages of Entity and Incremental Theorists Selecting Each Choice Option on the Impossible Anagram by Condition.

Choice	Q-P condition		Q-P-S condition	
	Entity	Incremental	Entity	Incremental
Quit	78.8	54.4	0	3.7
Answer	21.2	45.6	6.5	5.6
Switch	-	-	93.5	90.7

Table 2.2

Study 2: Anagrams Available in Study 2 According to the Order in which They were Presented.

Anagram	Difficulty Level	Possible Answers
CREOHTRSA	difficult	ORCHESTRA, CARTHORSE
LLONIECCOT	difficult	COLLECTION
LLQOOUIIAMCSLA	impossible	-
OHME	easy	HOME
SNUCUOCISPOM	impossible	-
CEDTANREENNESC	impossible	-
VVIITNNOAE	difficult	INNOVATIVE
MOOLCAIILSMN	impossible	-

Table 2.3.

Heckman Sample Selection Modeling (Full Maximum Likelihood) Results for the Total Number of Problems Attempted After the First Impossible One in Study 2.

	Selection step (0 = stopped at the impossible anagram; 1 = attempted anagrams past the impossible one)		Outcome step (total number of anagrams attempted)	
	Coefficient (SE)	95% CI	Coefficient (SE)	95% CI
Self-rated ability	-.10 (.06)	[-.22, .03]		
Implicit theory	.08 (.14)	[-.19, .35]	.53 (.24)*	[.06, 1.00]
Condition	1.21 (.14)*	[.94, 1.49]	1.51 (.54)**	[.46, 2.57]
Implicit Theory X Condition	-.16 (.14)	[-.22, .03]	-.44 (.24)	[-.91, .04]
Full model				Wald's $\chi^2(3) = 9.07,$ $p = .028$

Note: SE: standard error. 95% CI: 95% Confidence Interval. Number of observations = 275. * $p < .05$. ** $p < .01$. Heckman modeling requires an additional independent variable in the selection step that is not included in the outcome step reduce problems with model identification. We chose self-rated ability at anagram solving for this purpose.

Table 2.4.

Study 2: Percentages of Entity and Incremental Theorists Attempting Each Anagram After the Impossible Anagram by Condition.

Anagram Number (Difficulty)	1 (DIFF)	2 (DIFF)	3 (IMP)	4 (EASY)	5 (IMP)	6 (IMP)	7 (DIFF)	8 (IMP)
Q-P Condition								
Entity (%)	12.0	9.3	9.3	3.7	3.7	0.9	0	0
Incremental (%)	22.2	20.5	17.5	11.7	11.7	9.9	8.8	7.6
$\chi^2(df)$	4.60(1)	6.15(1)	3.70(1)	5.38(1)	5.38(1)	8.92(1)	10.01(1)	8.61(1)
<i>p</i> -value	0.032	0.013	0.054	0.020	0.020	0.003	0.002	0.003
Q-P-S Condition								
Entity (%)	52.8	49.1	44.4	38.9	38.9	38.9	38.0	36.1
Incremental (%)	48.0	44.4	40.0	37.4	37.4	37.4	35.7	35.1
$\chi^2(df)$	0.62(1)	0.57(1)	0.46(1)	0.06(1)	0.06(1)	0.06(1)	0.15(1)	0.03(1)
<i>p</i> -value	0.432	0.450	0.500	0.806	0.806	0.806	0.699	0.862

Note. Anagrams are labeled by their difficulty level: EASY = Easy anagram; DIFF = Difficult anagram; IMP = Impossible anagram. As shown in the top panel, in the Q-P condition, there were generally significant differences in the percentages of entity and incremental theorists attempting each anagram following failure on the impossible one. As shown in the bottom panel, in the Q-P-S condition, the percentages of entity and incremental theorists attempting each anagram were similar. Overall, there were higher percentages of both entity and incremental theorists attempting each anagram in the Q-P-S condition than in the Q-P condition.

Table 2.5

Study 2: Percentages of Entity and Incremental Theorists in Each Condition Who Accurately Solved Each Anagram After the First Impossible One Among Those Who Attempted Them.

Anagram Number (Difficulty)	1 (DIFF)	2 (DIFF)	3 (IMP)	4 (EASY)	5 (IMP)	6 (IMP)	7 (DIFF)	8 (IMP)
Q-P Condition								
Entity (%)	80.0	80.0	-	100.0	-	-	61.5	-
Incremental (%)	62.9	56.7	-	100.0	-	-	61.5	-
Exact test <i>p</i> value	.456	.269	-	N.A.	-	-	N.A.	-
Q-P-S Condition								
Entity (%)	87.5	100.0	-	100.0	-	-	93.8	-
Incremental (%)	95.0	93.5	-	100.0	-	-	92.0	-
Exact test <i>p</i> value	.355	.519	-	N.A.	-	-	.666	-

Note: Fisher's exact test *p* value were reported because the assumptions of the chi-square test were violated (expected cell frequencies < 5).

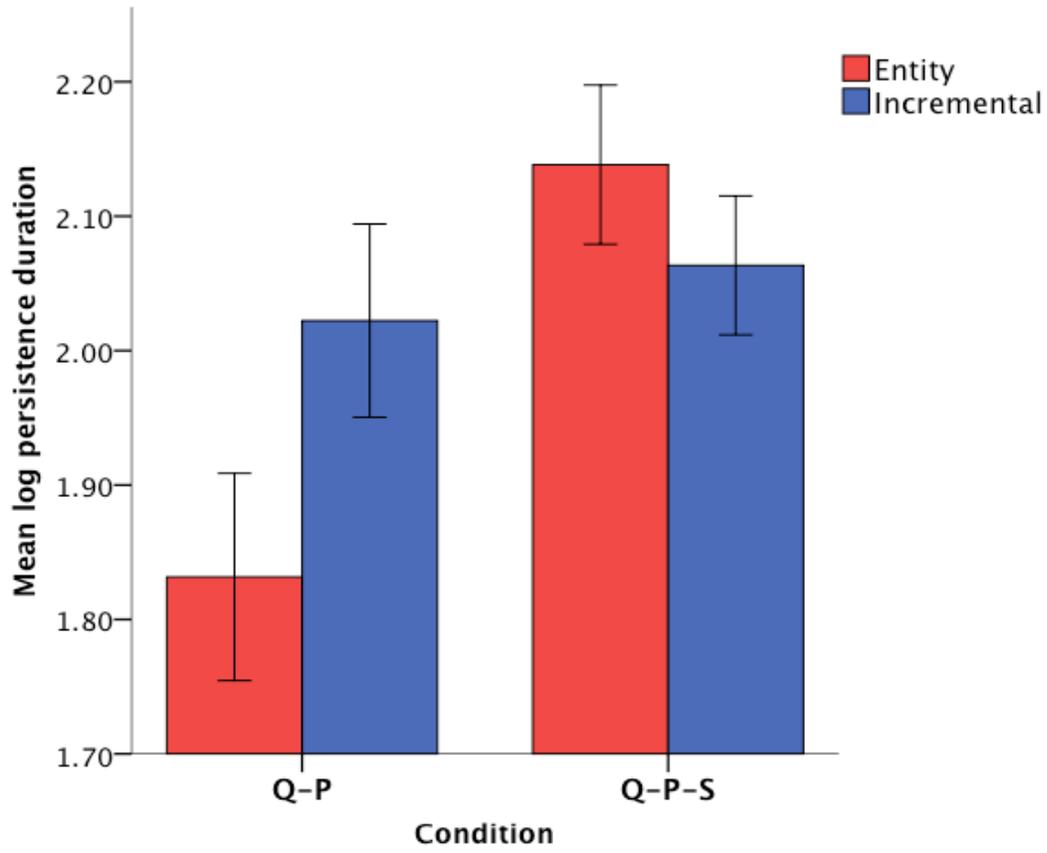


Figure 2.1. The interaction effect of implicit theory and choice condition on log total persistence time (log duration that participants spent working on anagrams after the first two easy practice anagrams) found in Study 2. Error bars represent ± 1 standard error.

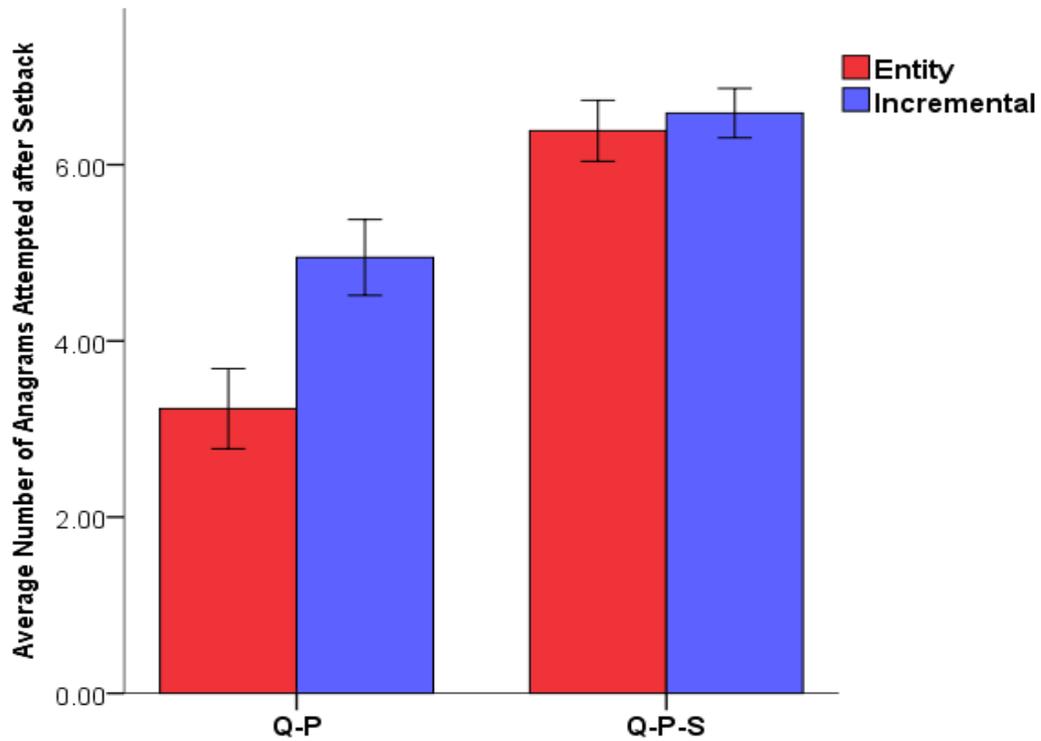


Figure 2.2. In Study 2, entity theorists in the Q-P condition attempted fewer anagrams after setback than incremental theorists. But when given the choice to switch in the Q-P-S condition, both entity and incremental theorists attempted significantly more anagrams. Error bars represent ± 1 standard error.

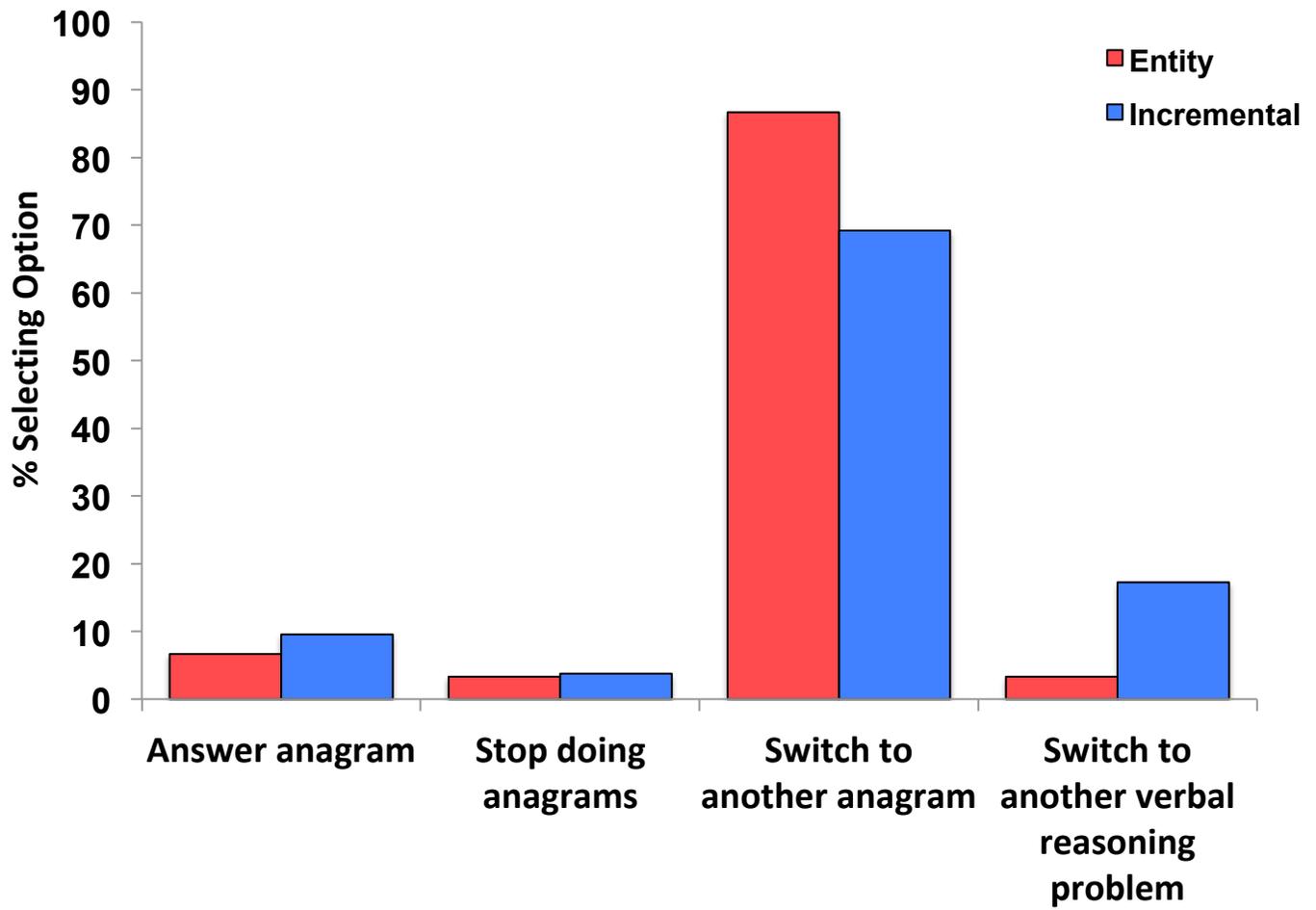


Figure 2.3. Bar graph showing the percentages of entity and incremental theorists selecting each choice option in Study 3a.

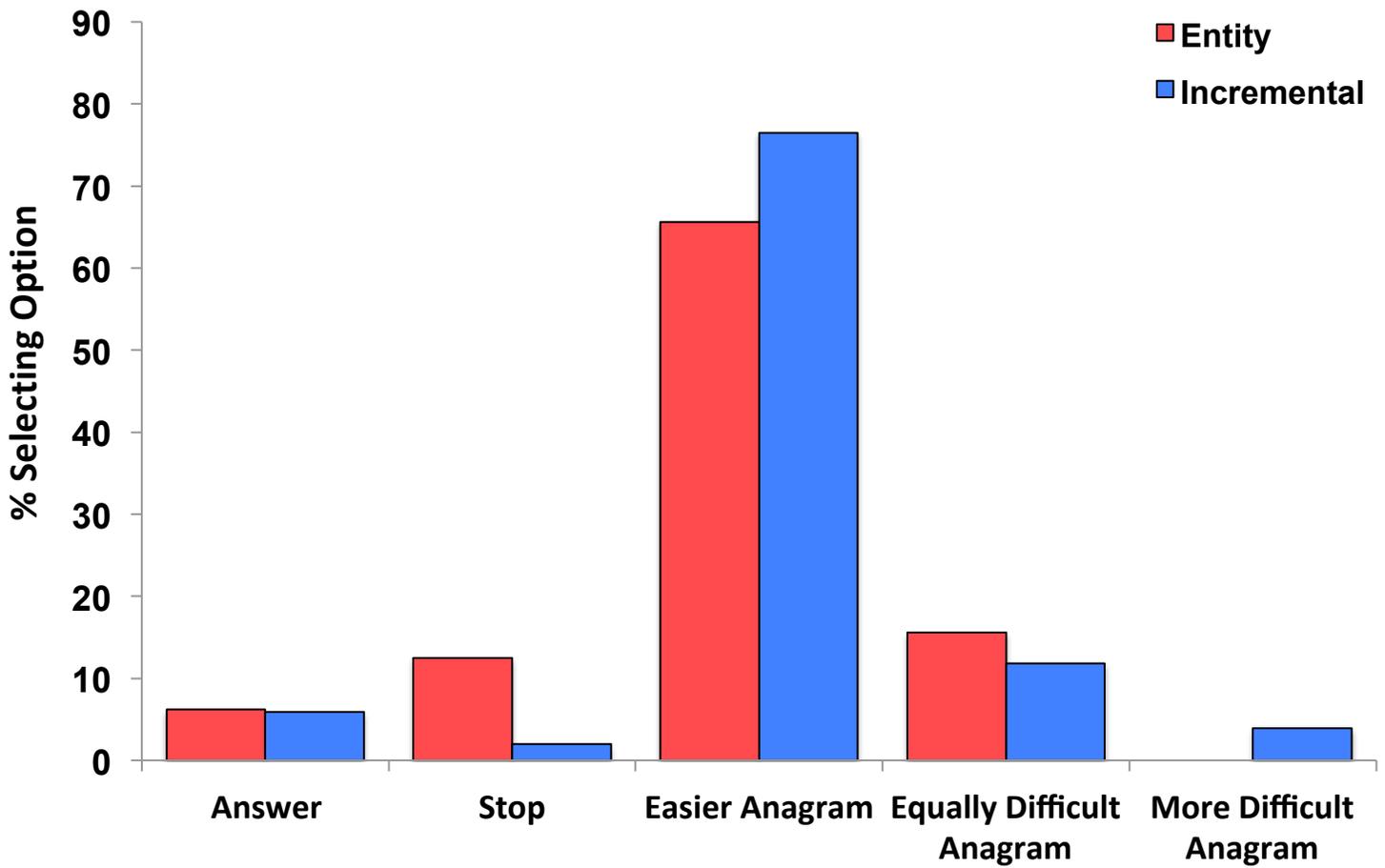


Figure 2.4. Bar graph showing the percentages of entity and incremental theorists selecting each choice option in Study 3b.

Appendix 2.A

Beliefs about Class Flexibility Scale

All items were administered on a 1 (Strongly Agree) – 6 (Strongly Disagree) response scale.

1. It is unlikely that I as a student can change much of the class requirements.
2. The fundamental structure of the course is something that can't be changed much by a student like me.
3. As a student, I cannot control how the instructors grade my coursework.
4. The instructors have their set ways of getting things done, and I as a student really can't do much to change their systems.

CHAPTER 3

Empirical Evidence for the Motivational Implications of Situation theories

Abstract

Social systems persist to the extent that they are complied with and desist to the extent that people take action to change them. Yet compared to what we know about why people adapt to their situations (e.g., Asch, 1956; Jost, Banaji, & Nosek, 2004; Milgram, 1963), much less is known about what factors predict action directed at changing the status quo. We propose that people's lay theories about whether situations are generally fixed or malleable influence how likely they are to act on improving unfavorable circumstances. Four studies showed that people who have malleable—as opposed to fixed—theories about their situations are more likely to speak up to improve their work conditions, protest against restrictive institutional policies, and even engage in collective action to change the status quo.

Adapting to Things You Cannot Change and Changing the Things You Can

*“God grant me the serenity to accept the things I cannot change,
The courage to change the things I can,
And the wisdom to know the difference.”*

- Serenity Prayer (Reinhold Niebuhr)

Our social systems exist in a delicate balance—robust to the extent that people accept them and fragile to the extent that people are likely to react against them. Although this balance often entails a system that upholds the needs of the majority, it almost always comes at a cost to some. This compromise is often tolerated, accepted, and conformed to, even by those who stand to lose most from the status quo (Jost & Banaji, 1994). The psychological literature, especially in social psychology, has spent decades examining and explaining these human tendencies to adjust to our circumstances (e.g., Asch, 1956; Jost, Banaji, & Nosek, 2004; Laurin, Shepherd, & Kay, 2010; Milgram, 1963). However, life is also filled with instances of people who actively change their social systems: People speak up to change organizational practices (Hirschman, 1970; LePine & Van Dyne, 1998), voice dissent against their own group’s norms (Packer, 2007; Packer, Fujita, & Herman, 2013), and initiate civil rights movements on a larger scale.

While we know a lot about how people are influenced by situational forces, comparatively less is understood about when and why people act to change their circumstances. In this paper, we propose and test one psychological mechanism that leads people to take action to change unfavorable circumstances: their lay theories about whether situations are generally fixed or malleable. We hypothesize that when people believe that situations in general are malleable rather than immutable, they are more likely to take action to change specific

circumstances that are disadvantageous to them. We review the literature and describe four studies which tested this prediction across various domains.

Adapting versus Changing the Situation

Social psychology abounds with evidence that people adapt to their situations. We know that people have a tendency to adjust their attitudes, beliefs, and behavior to match their situational demands. For example, classic studies on social influence show that people often obey even unreasonable commands from authority figures (Milgram, 1963), conform to group opinions whether or not they agree with them (Asch, 1956; Sherif, 1937), and follow what they think is socially normative (Cialdini, Reno, & Kallgren, 1990). Even when they stand to lose from their current circumstances, people justify the status quo (Jost & Banaji, 1994). We see instances of women who blame gender inequality in salary on biological differences, consensual inferiority among disadvantaged minorities, and even self-blame among victims of domestic violence (Janoff-Bulman, 1979; Laurin et al., 2010; Miller & Porter, 1983; Tajfel & Turner, 1986). A great deal of social psychological literature to date has emphasized the power of situational forces and how people's attitudes, beliefs, and behaviors are shaped by them.

Nonetheless, real life is also replete with examples of individuals enacting change on their circumstances—a perspective that has been comparatively less emphasized. From the employee who speaks up against unethical organizational practices to the American civil rights movement, we see proof that individuals are not merely passive slaves to their circumstances. Rather, they do take the initiative to change their social systems. For example, when members of lower-status groups see viable alternatives to the current status quo, they are more likely to try to challenge existing group boundaries (Tajfel, 1978; Tajfel & Turner, 1979, 1986). Moreover, group members actively voice their dissent against ingroup opinions at times. They are especially

likely to do so if they strongly identify with the group and perceive existing norms as harmful to the collective (Packer & Chasteen, 2010). Given the important implications of such “system-change” actions (Johnson & Fujita, 2012), what psychological mechanisms are responsible for motivating individuals to engage in them?

We propose that one important factor is whether people construe external situations as mutable or not. In other words, people’s lay theories (or fundamental assumptions) about how fixed or malleable situations are influence their actions to improve circumstances. We review the relevant implications of people’s lay theories about personal attributes and discuss how similar beliefs about situations can motivate them to change their circumstances.

Self Theories Motivate Personal Development

A factor that plays an important role in predicting self-improvement behavior is whether people interpret attributes as changeable or not. People’s beliefs about the stability or malleability of their personal attributes, or “self theories,” powerfully predict their efforts to improve those attributes (Dweck, 2000). The more people perceive a certain aspect of themselves as changeable, the more they invest in changing it to overcome challenges. For example, after receiving poor performance feedback on an intelligence task, students who saw intelligence as malleable were more likely to sign up for a remedial tutorial than students who saw intelligence as fixed (Hong, Chiu, Dweck, Lin, & Wan, 1999). Moreover, students who were taught this malleable intelligence mindset were buffered against the decrease in grades that often accompanies the transition to high school because they adopted healthier approaches to negative feedback (Blackwell, Trzesniewski, & Dweck, 2007).

Self theories also apply to a broad range of domains beyond intelligence and academics (e.g., Beer, 2002; Burnette, 2010; Hoyt, Burnette, & Innella, 2010; Kray & Haselhuhn, 2007;

Schumann, Zaki, & Dweck, 2014). People who construed their body weight as malleable rather than fixed, for instance, tried harder to self-regulate after dieting setbacks and lost more weight in the long run (Burnette, 2010; Burnette & Finkel, 2012). Despite feeling equally uncomfortable with social interactions at the outset, shy people who believed that their shyness was malleable used fewer avoidant social strategies when interacting with strangers than those who believed that their shyness was fixed (Beer, 2002). Similarly in emotion-regulation, people who believed that their ability to empathize was malleable exerted greater effort when faced with situations that challenged their empathy than those who believed it to be fixed (Schumann et al., 2014). In summary, when people believe that a particular aspect of themselves can be changed, they are more likely to work on cultivating and improving it.

Situation Theories Galvanize System Change

If people's self theories motivate personal development, do their beliefs about their external situations—which we broadly term “situation theories”— mobilize effort to improve their circumstances? We define “situation theories” as people's general beliefs about salient contextual factors external to themselves. These contextual factors could be other people who make up the salient and meaningful interpersonal context (such as a romantic partner or work supervisor), organizational institutions, their responsibilities on the job, the physical environment, or their circumstances more generally. We propose that the lay theories framework provides a useful approach for understanding how likely people are to take action to improve the situations they are in, above and beyond how they develop themselves. Just as people's self theories influence their likelihood of striving to improve personal attributes, construing situations as malleable rather than fixed may predict how likely they are to take action to better their circumstances.

This theorizing is consistent with early empirical evidence on general lay theories about the world and the literature on when people take action to change things. Dweck, Chiu, and Hong (1995) first introduced the idea of lay theories of the external world, though little research has since expanded on the concept and its implications. In a series of studies, Chiu, Dweck, Tong, and Fu (1997) found that people who endorsed a malleable socio-moral order (i.e. simultaneously believe in a malleable world and morality) viewed the system as responsible for protecting individual rights and liberty, and therefore agreed that “the status quo can be changed when (it is) obstructive of these ends” (p. 938). On the other hand, those who believed in a stable socio-moral order (i.e. simultaneously believe in a fixed world and morality) emphasized duty-based individual conformity to uphold the stable and orderly status quo. In a similar vein, Chiu and Hong (1999) showed that when China took over Hong Kong in 1997, the citizens of the newly annexed region resisted cultural assimilation when they saw the world as malleable, but embraced it to a greater extent when they saw the world as fixed (Chiu & Hong, 1999). These findings fit with the idea that seeing external situations as malleable motivate people to take action against unfavorable circumstances, and vice versa.

Research on when people actively try to change the way things are, as opposed to rationalizing their current circumstances (e.g., Johnson & Fujita, 2012; Jost & Banaji, 1994; Laurin, Gaucher, & Kay, 2013; Laurin, Shepherd, & Kay, 2010), is also consistent with our basic hypothesis. As Tajfel and Turner (1979) put it, “Where status relations are perceived as immutable, a part of the fixed order of things, then social identity is secure. It becomes insecure when the existing state of affairs begins to be questioned” (p. 45). When members of lower-status groups see viable alternatives to the current status quo—i.e., when they recognize that their situation can be malleable—they mobilize social change; but when they fail to see these

alternatives, they accept the legitimacy of the current system (Jost et al., 2004; Tajfel, 1978; Tajfel & Turner, 1979). On the other hand, unchanging societal trends over time and environmental cues such as restrictions on geographical movement—i.e., cues that suggest the social system is immutable—facilitates rationalization of the current status quo rather than the desire to change it (e.g., Laurin et al., 2010, 2013). Finally, salient evidence that others have successfully changed the system—i.e., making it salient that the system is malleable—can motivate people to be more open to hearing about the negative aspects of the current system and therefore to improve it (Johnson & Fujita, 2012). These various lines of research support our contention that having a malleable (as opposed to a fixed) view of situations motivates people to take action to change unfavorable circumstances.

Overview

Four studies tested the hypothesis that people are more likely to take action to change unfavorable circumstances when they believe that situations are generally malleable rather than fixed. Study 1 tested whether people's intentions to improve their situations are driven by situation theories or self theories. Study 2 examined whether manipulating people's situation theories affects their intentions to improve an unfavorable work situation by voicing their dissatisfaction. Study 3 was a field study that tested whether people's situation theories affect their likelihood of protesting a restrictive institutional policy. Study 4 extended our findings to workers' engagement in online collective action aimed at improving their low wages.

Study 1: Situation Theories versus Self-Theories

First, we tested whether it is people's lay theories about situational malleability or their lay theories about personal malleability that motivate them to improve unfavorable circumstances. On one hand, people could be proactive at changing their circumstances because

they think that situations are malleable and therefore that they can do something to change things. But on the other hand, this could be driven by their own inflexibility—they may realize that they cannot adjust to the current negative circumstances and therefore take action to change things.

We tested these two alternative explanations by independently manipulating people's beliefs about a salient other in context or their beliefs about themselves, and measured how they reacted to the same work conflict scenario. We randomly assigned participants to one of 4 groups: A first group imagined that their supervisor was malleable, a second imagined that their supervisor was fixed, a third imagined that they themselves could change, and a fourth imagined that they themselves could not. The work conflict scenario that all participants saw was modeled after a dilemma that employees commonly experience when work policies change: The choice between accepting the new situation or proactively voicing their unhappiness in the hope of changing things. We predicted that we would see an effect of situation theories, but no effect of self-theories, on proactive voice intentions.

Method

Eighty-two participants (57.3% male, $M_{age} = 27.1$ years, age range = 18 – 67 years, USA, Mechanical Turk) were randomly assigned to one of four possible conditions: fixed situation, malleable situation, fixed self, or malleable self. All participants read the same work conflict scenario and an additional manipulation sentence based on their randomly assigned condition. The work conflict scenario was:

Imagine that you have been working at a company for the past 3 years. Things have been going pretty well until a recent change in your department supervisor three months ago, as a result of a company acquisition. Over the past three months, your new supervisor has been expecting your whole department to work significantly longer hours for the same

pay. He is unfamiliar with your old company's culture, and seems to be operating under the norms of your new company. Among others from your old company, you are unhappy with the new work demands.

Those in the fixed situation condition additionally read that their supervisor was "not at all open to change;" those in the malleable situation condition read that their supervisor was "very open to change;" those in the fixed self condition read that they themselves were "not at all open to changing" in the situation; whereas those in the malleable self condition additionally read that they were "very open to changing" in the situation. All participants then rated how likely they were to change themselves to accommodate the situation or try to change the situation by voicing their dissatisfaction (1 = *Adapt to the circumstances*; 6 = *Voice my dissatisfaction*).

Results & Discussion

We conducted two main comparisons based on our prior predictions. First, did people's beliefs about the situation (i.e. how open their supervisor was in this case) affect their intentions to take action? Second, did their beliefs about their own selves affect these intentions? To address each question, we conducted planned contrasts between the fixed and changeable conditions for the situation and self, respectively. Our results showed that there was a significant effect of situation theories on participants' likelihood of voicing their dissatisfaction, $t(78) = 2.13$, $p = .04$, $[.21, 1.71]$, $d = .48$, but this difference was not significant for self theories, $p = .60$, $[-.99, .51]$. People who faced a supervisor who was open to change were significantly more likely to voice their dissatisfaction ($M = 4.76$, $SD = 1.22$) than those who faced a fixed supervisor who was not at all open to change ($M = 3.80$, $SD = 1.44$). But people who saw themselves as fixed ($M = 4.24$, $SD = 1.48$) were just as likely to voice their dissatisfaction as those who saw themselves as changeable ($M = 4.00$, $SD = 1.62$).

These results supported our predictions that people's beliefs about the malleability of their situations but not their beliefs about themselves predict how likely they are to take action to change unfavorable situations. This study provided a preliminary test of the causal association between situation beliefs and people's effort to improve their circumstances. Having shown that beliefs about the situation rather than the self predict how people respond to challenge, the next few studies extended these findings to people's lay theories about situations *in general*.

Study 2: Taking Action in a Work Conflict

Study 1 showed that people's beliefs about their specific situations (their supervisors in this case) rather than their own flexibility predict how likely they are to take action to improve the circumstances. In this study, we tested if these effects generalized to people's *general* lay theories about situation changeability. We used a biased questionnaire manipulation to encourage beliefs about situations as either fixed or malleable and measured people's reactions to the same work conflict scenario.

Method

Sixty-one adults (60.7% male, $M_{age} = 29.9$ years, USA, Mechanical Turk) participated in our online survey. We randomly assigned them to the fixed condition or the malleable condition, which differed only in terms of which version participants completed of the biased questionnaire manipulation. The manipulation involved questions that were framed in a way to elicit general agreement with the stance manipulated. These biased questionnaires were adapted from previous research that has established the effectiveness and subtlety of biased questionnaire manipulations (e.g., Job, Dweck, Walton, 2010; Laurin, Kille, & Eibach, 2013).

In the fixed condition, we asked participants to rate their agreement with three moderately-worded questions that favored a fixed theory ("People do not always have the

potential to change the situations they are in.”, “We should not assume that people’s circumstances can always be easily changed.”, and “The external world may sometimes be resistant to change.”) and with one strongly-worded question that favored a malleable theory (“People can always easily change the circumstances they are in.”). We expected that participants would agree with the moderate items and disagree with the strong item so that they ended up endorsing the belief that situations are generally fixed on average.

In the malleable condition, we reversed the wording of these questions: The moderate, easy-to-agree-with items now favored a malleable theory (“People can sometimes find ways to change the situations they are in.”, “We should not assume that our circumstances are always unchangeable.”, and “People have the potential to change the situations they are in.”). The strongly worded, disagreeable item now favored a fixed theory (“The external world can never be changed by people.”). Here, we expected that participants to go through the questionnaire agreeing with the notion that situations are generally malleable and disagreeing with the notion of situations being fixed, so that they ended up endorsing the belief that situations are malleable on average. All participants rated their agreement or disagreement with these questions on 1 (*Strongly Agree*) to 6 (*Strongly Disagree*) scales.

They then read the same work conflict scenario as in Study 1 and responded to it by indicating how likely they were to accommodate the situation or try to change the situation by voicing their dissatisfaction (1 = *Adapt to the circumstances*; 6 = *Voice my dissatisfaction*).

Results & Discussion

In each condition, the single opposite stance item was negatively correlated with the composite of the agreeable biased questionnaire items (fixed: $r = -.79, p < .001$; malleable: $r = -.62, p < .001$), so we reverse-scored it before averaging the items to form a scale. The biased

questionnaires worked as intended: On average, they were successful at getting people to agree with the relevance stance proposed in each condition. Those in the fixed condition significantly agreed, on average, that situations are generally immutable ($M = 2.85$, $SD = .86$; different from scale midpoint: $t(29) = -4.15$, $p < .001$, $[-.97, -.33]$), whereas those in the malleable condition significantly agreed, on average, that situations can generally be changed ($M = 1.85$, $SD = .82$; different from scale midpoint: $t(30) = -11.25$, $p < .001$, $[-1.95, -1.35]$). Note that lower numbers reflected greater agreement with each scale. Both scales were reliable ($\alpha_{\text{fixed}} = .87$; $\alpha_{\text{malleable}} = .86$).

Supporting our hypothesis, participants who were encouraged to believe that situations are malleable were more likely to take action to change their circumstances ($M = 4.52$, $SD = 1.24$) than those who were encouraged to believe that situations that are fixed ($M = 3.73$, $SD = 1.36$), $t(59) = -2.35$, $p = .02$, $[-1.45, -.12]$, $d = .61$. Although the specific scenario described a male supervisor, the likelihood of taking action did not differ by participant gender, $p = .87$, $[-.77, .65]$, and participant gender did not interact with condition, $p = .71$, $[-1.66, 1.14]$.

Consistent with our hypothesis, people who believed that situations are generally malleable were more likely to voice their dissatisfaction to improve their work conditions, relative to those who believed that situations are generally fixed. These results replicated when we framed the salient situational factor more concretely (as in Study 1) and when we referred to people's beliefs about situations more generally in this study.

However, our evidence thus far has been based on a hypothetical scenario and a dependent measure which assessed proactive voice behavior and adapting to the circumstances as two extremes of the same continuum. Conceivably, then, our results could have indicated that participants in the malleable condition had less of a desire to adapt to the situation, but not necessarily a stronger motivation to take action. We designed the next study to address this and

to provide a more realistic test of how people react towards new restrictive institutional policies. We tested our hypothesis in the field where students had to choose between taking action to change the system or adapting to the policies imposed.

Study 3: Protesting an Institutional Policy

Having shown that people's situation theories affect proactive intentions in a hypothetical work conflict, Study 3 replicated our findings in a field setting with policy implications and actual behavior. We took advantage of a recent change in University President to tell students about a new University policy that imposed restrictions on how and when they could change classes. We tested whether our manipulation of situation theories would affect how likely they were to join a student-led campaign protesting the disadvantageous policy. Our hypothesis was that students induced to endorse a malleable theory of situations would be more likely to sign a protest petition to change the policy than those induced to endorse a fixed theory.

Method

Confederates, who presented themselves as student government representatives, recruited 149 students (61.3% male, $M_{\text{age}} = 20.8$ years) individually in the student union of a large Midwestern university to participate in a survey on students' beliefs and attitudes. Each participant received a survey that randomly assigned him or her to either the fixed or malleable condition.

Among other filler questions, participants responded to a four-item biased questionnaire similar to that which we administered in Study 2. As in Study 2, three moderately-worded items in each condition were phrased to elicit agreement with the relevant stance and one strongly-worded item was phrased to elicit disagreement. This was designed so that people agreed on average with the stance in their assigned condition. In the fixed condition, students answered

three agreeable questions (“People cannot always easily change the situations they are in.”, “Sometimes, the external world can be difficult to change.”, and “Some situations can be hard to alter.”) and one disagreement-eliciting question (“People can always easily change the world around them”). In the malleable condition, students read three parallel agreeable questions (“People can sometimes find ways to change the situations they are in.”, “Sometimes, the external world can be open to change.”, and “Some situations can be altered.”), and one disagreement-eliciting item (“People can never change the world around them.”). All biased questionnaire items were answered on 1 (Strongly Disagree) to 6 (Strongly Agree) scales, so that higher ratings indicated greater agreement. All student participants then read the following description of a new drop/ add college policy:

Under the new President’s administration, the College’s drop/ add policy is being amended. Previously, students were able to add and drop courses through the first three weeks of each semester. Due the disruptive nature of having students drop in and out of classes, under this new policy, the drop/ add period will only last for the first two weeks of each semester. Along with shortening the drop/ add period from three weeks to two weeks, students wishing to drop a course during the two week drop/ add period will have to obtain their instructor’s written permission before dropping the course through wolverine access⁴. In other words, students will have less flexibility in adding and dropping courses each semester. However, this policy would help the College by providing more stability in course attendance, which facilitates instruction and group projects. The new drop/ add policy will affect all students.

Students finished the survey by answering filler and demographic questions.

⁴ Wolverine access is the University’s online portal for students that they use to add, drop, and switch classes.

While retrieving the survey, the confederate casually thanked them and told them that the student government was divided on the new policy—some members accepted the changes whereas some did not. Those who disagreed with the policy had put together a protest petition for students to sign if they were interested. The confederate passed each participant a clipboard with the protest petition to read on their own. To make it seem realistic, we gave each participant a petition that contained exactly 14 signatures out of 28 blanks. The confederate left each participant alone for three minutes to read and decide whether or not he or she wanted to sign the petition before returning to retrieve the clipboard. The experimenter then thoroughly debriefed each participant about the purpose of the experiment.

Results & Discussion

We excluded data from 13 participants to whom the policy change did not apply, such as graduate students and those who had already graduated, and 5 participants who did not follow key parts of the experimental procedure (e.g., did not fill out the biased questionnaire or did not read the policy description before answering the questions). Because we did not screen participants beforehand as part of our inclusive participant recruitment method, we had to enforce these exclusion criteria before analysis to ensure the quality of our data for interpretation.

The biased questionnaire manipulations worked as intended: Those in the fixed condition significantly agreed, on average, that situations are generally immutable ($M = 4.17$, $SD = .90$; different from scale midpoint: $t(61) = 5.92$, $p < .001$, $[.45, .90]$). Those in the malleable condition agreed, on average, that situations are generally changeable, ($M = 4.90$, $SD = .65$; different from scale midpoint: $t(68) = 17.93$, $p < .001$, $[1.24, 1.55]$). In each condition, the opposite stance item was negatively correlated with the aggregate of the other items (fixed: $r = -.34$, $p = .01$;

malleable: $r = -.47, p < .001$), so we reverse-coded it before averaging the items as in Study 2. The scales were moderately reliable ($\alpha_{\text{fixed}} = .77; \alpha_{\text{malleable}} = .66$).

Our results showed that a marginally significantly higher proportion (73.9%) of students primed with a changeable situation belief signed the protest petition, compared to those primed with a fixed situation belief (58.1%), $b = .72, SE = .38, \text{Wald}(1) = 3.63, p = .06, \text{odds ratio} = 2.05, \text{CI}_{\text{Exp(B)}} [.98, 4.28]$. We speculate that the noise present in this field study may have partially obscured the effect, but nevertheless a difference of 15.8% is a sizeable proportion that could affect whether or not a new policy is instituted and whether or not its implementation succeeds.

In this field study, we replicated our previous findings with a more realistic behavioral dependent measure. Again, we found that people's attempts to change new organizational policies hinge on their general beliefs about situational changeability. When they believed that situations are generally malleable rather than fixed, college students showed a higher likelihood of joining organized group action to oppose administrative restrictions. Thus, changing these situation theories, even through subtle survey question wordings, can have powerful motivational effects on people's reactions towards disadvantageous institutional policies. Our next study sought to generalize our findings to other important societal implications beyond how people react to newly imposed organizational restrictions. We tested whether the effects of situation theories also extend to how likely people are to join collective action aimed at changing an *existing disadvantageous status quo*.

Study 4: Collective Action to Change the Status Quo

Do the effects of situation theories extend to real world engagement in collective action to change unfair systems? Study 4 addressed this question with a population of working adults

whose labor is being exploited for extremely low wages, benefitting others at their expense. Our primary aim was to test whether construing situations as malleable rather than fixed galvanizes individual engagement in collective action aimed at improving the status quo.

For this study, we recruited a sample of Amazon Mechanical Turk Workers, many of whom accept online work for surprisingly low pay (Kirsner, 2012; Dobson, 2013; Mills, 2007). We manipulated our participants' situation theories and then gave them information drawn from a real article about the low wages on Mechanical Turk. Our participants got the opportunity to participate in a real online collective action campaign aimed at changing the low wages on Mechanical Turk. With the prevalence and reach of the internet today, online collective action is generally considered effective and is seen as “an equivalent alternative to offline action” (p. 290) by activists and nonactivists alike (Postmes & Brunsting, 2002). We used this design to provide external validity for our predictions.

Method

We recruited 151 Amazon Mechanical Turk Workers (66.2% male, $M_{age} = 34.4$ years, location: USA) to participate in an online study about their thoughts and feelings regarding Mechanical Turk (MTurk). As in previous studies, we randomly assigned Mechanical Turk Workers (or “Turkers” as they call themselves) to either the fixed or malleable condition. Based on their assigned condition, they filled out a survey including three agreement-eliciting biased questionnaire items embedded among other filler questions. We improved on the wording of the questions from previous studies to increase reliability of the scales. Those in the fixed condition received the three questions: “People are not always easily able to change the situations they are in.”, “Sometimes, circumstances can be difficult to change.”, and “Some situations can be hard to alter.”. Those in the malleable condition received the three questions: “People can sometimes

find ways to change the situations they are in.”, “Sometimes, circumstances can be open to change.”, and “Some situations can be altered.”. All questions were answered on 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scales, such that higher ratings indicated greater agreement. We did not use include reverse-scored questions in this study.

All participants then read a short article about the low wages on Mechanical Turk. This was adapted from an actual article entitled “Amazon Mechanical Turk Workers are being paid pennies to do mind-numbing work” (Mieszkowski, 2006). The article excerpt can be found in the Appendix 3.A. This article served to remind our Mechanical Turk participants about the existing status quo that was benefitting others in society at their expense.

After they had read the article, we introduced them to the Dynamo community, which runs an online collective action campaign. This campaign involves Turkers writing letters to Amazon CEO, Jeff Bezos, to improve work circumstances for them, including their pay and image⁵. We gave our participants the opportunity to support the campaign if they wished by writing briefly about how they felt about Mechanical Turk Workers’ pay and signing off with their initials. We made it clear that they could leave this blank and proceed if they did not wish to support the campaign, and that their choice would not have an effect on their compensation.

To make sure that they had read and understood the gist of the article, our Mechanical Turk participants filled out two attention check questions about the contents of the article we presented earlier (“Was the article positive or negative about MTurk Workers’ pay?” and “Which of the following issues was the main focus of the article?”). They chose among four choice options for each question, both of which were easy to answer if they had read the article. Additionally, we measured the perceived relevance of the issue on a 9-point scale (“How

⁵ More information about this online campaign can be found at: <http://www.wearedynamo.org> and http://wiki.wearedynamo.org/index.php/Email_campaign_to_Jeff_Bezos.

relevant is the issue of Mechanical Turk Workers' pay to you?"). Finally, participants reported their general Mechanical Turk usage (frequency of use, earnings per week, and time spent per week) and whether or not they used Mechanical Turk as a source of income (Yes/ No). We did not expect to find any differences on these measures between conditions.

Results & Discussion

We excluded nine participants who failed to correctly answer both attention check questions about the contents of the article. Including them in our analyses did not change our pattern of results. Mechanical Turk participants in both conditions did not significantly differ in how frequently they used Mechanical Turk, $p = .50$, $[-.24, .12]$, how much they earned a week, $p = .49$, $[-39.92, 19.14]$, or how many hours they spent on Mechanical Turk weekly, $p = .79$, $[-6.04, 4.60]$. A logistic regression analysis showed that there were no significant differences in the proportions of participants in each condition who used Mechanical Turk as a source of income, $p = .14$, $CI_{Exp(B)} [.45, 1.12]$. Across the board, participants reported that the issue of Mechanical Turk wages was highly relevant to them, $M = 7.17$, $SD = 2.07$. This did not significantly differ by condition, $p = .11$, $[-1.24, .13]$.

As in the previous studies, our biased questionnaire manipulations were successful at soliciting general agreement with the stance presented. On average, people agreed with the specific stance they were presented: Those in the fixed condition significantly agreed, on average, that situations are generally immutable ($M = 4.67$, $SD = .82$; different from scale midpoint: $t(74) = 12.29$, $p < .001$, $[.98, 1.36]$). Those in the malleable condition significantly agreed, on average, that situations are generally changeable ($M = 4.96$, $SD = .79$; different from scale midpoint: $t(66) = 15.02$, $p < .001$, $[1.26, 1.65]$). Overall, participants' responses to the biased questions were consistent ($\alpha_{fixed} = .79$; $\alpha_{malleable} = .94$).

We coded the content of participants' responses as either supportive of the campaign or supportive of the current status quo (i.e. protested the low wages or supported the current wages, respectively). The majority of these responses supported the campaign for change, but there were 3 responses that favored the current status quo (e.g., "I think the pay is fair given the little to no skills it requires").

Our logistic regression analysis found significant differences between conditions in the proportions of people who explicitly supported the campaign and those who did not (i.e. they did not leave a letter or responded with support for the current system). As predicted, there was a significantly higher proportion of Turkers who behaviorally supported the campaign in the malleable condition than in the fixed condition (44.8% vs. 24.0%), unstandardized $b = .94$, $SE = .37$, $Wald(1) = 6.66$, $p = .01$, odds ratio = 2.57, $CI_{Exp(B)} [1.26, 5.25]$. These results replicated when we repeated the analysis only comparing those who supported the campaign against those who did not leave a response to support it (i.e. excluding participants whose responses were supportive of the status quo), unstandardized $b = .94$, $SE = .37$, $Wald(1) = 6.48$, $p = .01$, odds ratio = 2.55, $CI_{Exp(B)} [1.24, 5.23]$.

These results replicate our previous findings and support the main hypothesis: People who believe that situations are generally malleable are more likely to take action to change a disadvantageous status quo than those who believe that situations are generally fixed. They show that situation theory effects extend beyond contexts concerned with newly imposed institutional restrictions to individuals' engagement in real collective action. Our four studies present a consistent picture of the motivational implications of situation theories: Believing in situational malleability rather than fixedness promotes proactive behavior aimed at improving unfavorable circumstances.

General Discussion

Life abounds with disparities between what people ideally want and what their circumstances afford. For example, they may be dissatisfied with their boss' demands, restricted by a change in organizational policy, or they may even be contributing to a social system that benefits others at their expense. On one hand, these conditions can be complicated dilemmas; on the other hand, they offer people a choice: adapt to the circumstances or take action to change them. Whether people respond by proactively taking action to improve their circumstances depends on their beliefs about external situations.

Across four studies, we found that whether people believe that situations are generally stable or malleable motivates them to change unfavorable circumstances that they face. Study 1 showed that these situation theories, rather than self theories, explain people's proactive system-change behavior. Using the same work setting, Study 2 found that this causal relation extends to how people construe situations more generally. Study 3 replicated our findings in the field, showing that a malleable rather than fixed situation theory motivates people to protest against restrictive institutional policies. Study 4 found that these situation theory effects also generalize to people's engagement in real world collective action to improve the status quo.

Limitations and Future Directions

Given our findings, an important question that nonetheless remains is *why* perceiving situations as malleable motivates change-oriented behavior. Do these effects occur because people feel more efficacious about *personally* influencing malleable circumstances (a self-efficacy explanation), or because they perceive a higher likelihood of *anyone* changing the circumstances (i.e. general perceived likelihood of success)? Alternatively, are people more motivated to take action because believing that situations can change makes them less supportive

of the way things are (i.e. negative attitudes towards the status quo; Chiu & Hong, 1999; Laurin, Kay, & Fitzsimons, 2012)? Ongoing research is attempting to assess these various plausible explanations of situation theory effects.

Another avenue for future research is to test new ways of manipulating situation theories other than biased questionnaires. Two methods that we are currently piloting include mock scientific articles meant to foster agreement with each of these views and getting participants to self-generate reasons why situations can or cannot be changed. Identifying new ways that we can change people's situation theories through simple psychological manipulations could usefully expand our repertoire of psychological tools.

Furthermore, future research could look at other types of proactive situation-improvement behavior that situation theories may play an important role in. Our lab is examining whether the effects of situation theories extend to circumstances where people do not have sufficient or adequate resources to accomplish their tasks. We are testing if it is possible to motivate resourceful behavior by changing people's situation theories.

In focusing on general lay theories about situations, our studies have been relatively silent on other contextual factors and individual differences that may moderate situation theory effects. Yet moving forward, it is important for future research to establish when we can expect situation theories to relate to change behavior and when these effects might be contingent upon other factors. Factors such as personal relevance, situational ambiguity, and conscientious group membership may moderate when our situation theories motivate proactive behavior. For example, Johnson and Fujita (2012) found that people have greater intentions to change their own institutional systems (when they see them as changeable) rather than others' which have no implications for themselves; Packer and colleagues (2013) showed that highly conscientious

group members are more likely to voice their dissent to the majority's opinion when they view group norms as detrimental to the group, but members low in conscientiousness are much less motivated to do the same. Understanding the contextual factors and individual differences that interact with people's lay theories of situations could valuably qualify when situation theories motivate system-change behavior and when they are much less likely to.

Finally, what roles do beliefs about stability and control play in situation theory effects? Do these effects occur because people see the world as inherently malleable (a stability argument) or because they believe that they can personally change situations (a control argument)? We argue that both may be plausible. Past research has not explicitly separated the two in measuring and manipulating self theories. In fact, self theory measures do not isolate the elements of stability and control. For example, "You can always substantially change how intelligent you are." and "Your personality is something about you that you can't change very much." (Dweck, 2000). Early research on world theories may similarly involve both elements of stability and control in changing the world (e.g., "Though we can change some phenomena, it is unlikely that we can alter the core dispositions of our world." and "Our world has basic or ingrained dispositions, and you really can't do much to change them."; Chiu et al., 1997). Thus, to the extent that lay theory research could be manipulating both of these psychological mechanisms at the same time, lay theory effects may confound these psychological processes. Alternatively, lay theory effects may very well be contingent on both as important motivational ingredients, rather than just one or the other. It will be fruitful for future lay theory research to clearly disentangle whether it is the sum of the parts or one of the two processes that primarily drive these effects.

Implications

Practical implications. These findings offer practical applications for the workplace and systems of governance. To the extent that people believe their situations can change, they will display a greater tendency to speak up against unfair policies (Studies 1-2), challenge institutional policies that restrict their freedom (Study 3), and even engage in collective action to change the status quo (Study 4). Hence, organizations that want proactive employees should put in place policies that foster the belief in a system welcome to improvement, perhaps through showing that management is open to suggestions for change, giving employees greater autonomy in their work roles, and engaging them more in organizational decisions. On the other hand, strict bureaucracies, significant red tape, and harsh punishment for nonconformity may cue fixed situation beliefs, which contribute to better adherence to rules and more accepting citizenry. These and other ideas can be found in the Organizational Behavior literature, which offers a rich repertoire of organizational practices that psychology research can draw from to signal fixed or changeable systems (e.g., Detert & Burris, 2007; Dutton & Ashford, 1993; Grant & Ashford, 2008; Dutton, Ashford, O’neill, Hayes, & Wierba, 1997). Our findings highlight the importance of understanding what beliefs our systems and structures are cueing in their members, and how these beliefs lead to different degrees of active participation in systemic changes.

Theoretical implications. Many psychological studies have focused on people’s tendency to adapt to demands of the situation, whether consciously or not (e.g., Cialdini & Trost, 1998; Jost & Banaji, 1994; Jost et al., 2004; Laurin et al., 2013; Milgram, 1963; Sherif, 1937). Comparatively speaking, how and when people change their circumstances despite situational pressures to the contrary is relatively less well-understood. Yet in revisiting many classic studies, we observed a substantial proportion of non-conformity and behavioral reactance in participants.

Take Asch's (1956) original study for instance, participants did not go along with the majority's erroneous judgments in two-thirds of the trials. In Milgram's obedience experiments, one-third of the participants did not go to the end of the electric shock scale and most participants voiced or showed signs of discomfort with complying (Milgram, 1963).

It may be timely to remind ourselves of Asch's (1955, p. 5) response to his original experiments: "Yet anyone inclined to draw too pessimistic conclusions from this report would do well to remind himself that the capacities for independence are not to be underestimated." We hope that this research will contribute to and inspire more empirical work about when people take action to change their social systems despite the odds.

Conclusion

Social systems persist and change because of the people in them. Even though the status quo may appear stable, seeds of its collapse may be germinating in individuals' minds. One psychological source of the impetus to change things is whether people believe that situations can change. Coupled with circumstances deemed unsatisfactory, malleable situation theories constitute a powerful force in galvanizing action to improve the status quo.

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Appendix 3.A

Amazon Mechanical Turk Workers are being paid pennies to do mind-numbing work.

ADAPTED FROM ARTICLE BY [KATHARINE MIESZKOWSKI](#)



As soon as it launched, the Mechanical Turk site sparked a hue and cry in the blogosphere. “Amazon, you cheap bastard. Don’t you at least have the decency to pay minimum wage?” demanded one poster on a tech site. Another commentator sneered that it peddled “jobs even illegal aliens won’t do.”

To a labor activist like Marcus Federson, a tech workers union, the whole arrangement represents a virtual sweatshop. “What Amazon is trying to do is to earn money out of virtual day laborers. This disadvantages the worker for the benefit of the employer, who is paying much lower than minimum wage,” he says.

Rebecca Smith, a lawyer for the National Employment Law Project, seconds that. “It’s day labor in the virtual world.” Smith sees Mechanical Turk as just another scheme by companies to avoid paying their workers minimum wage, insurance, and overtime fees.

CHAPTER 4.

Lay Theories about Person-Situation Interactions: Finding A Fit or Developing It

Note. This work was published in Chen, P., Ellsworth, P. C., & Schwarz, N. (in press). Finding A Fit or Developing It: Implicit Theories about Achieving Passion for Work. *Personality and Social Psychology Bulletin*. The online supplemental materials are included in this dissertation and denoted by an “S” at the end of the table, figure, or appendix title.

Abstract

“Passion for work” has become a widespread phrase in popular discourse. Two contradictory lay perspectives have emerged on how passion for work is attained, which we distill into the “*fit*” and “*develop*” implicit theories. Fit theorists believe that passion for work is achieved through finding the right fit with a line of work; develop theorists believe that passion is cultivated over time. Four studies examined the expectations, priorities, and outcomes that characterize these implicit theories. Our results show that these beliefs elicit different motivational patterns, but both can facilitate vocational well-being and success. This research extends implicit theory scholarship to the work domain and provides a framework that can fruitfully inform career advising, life coaching, mentorship, and employment policies.

Finding A Fit or Developing It: Implicit Theories about Achieving Passion for Work

“The only way to do great work is to love what you do.” This sentiment, famously expressed by Steven Jobs, Apple co-founder and CEO, reflects an increasing concern in American society with the *meaning* of work (e.g., Anteby & Wrzesniewski, 2014; Herzberg, Mausner, & Snyderman, 2011; Wrzesniewski, 2003). Since a large portion of our lives is dedicated to working, it is natural that we seek enjoyment and fulfillment in it. This experience of identifying with a line of work that one loves, looks forward to, is intrinsically motivated by, and derives fulfillment from has been effectively summarized by lay people in the term “passion for work” (Chen, Ellsworth, Schwarz, & Lim, in prep).

The notion of having passion for one’s work is pervasive in our popular discourse (e.g., Coleman, Gulati, & Segovia, 2012; Kang & Albion, 2005; Newport, 2012). And understandably so—passion has been shown to be associated with important work outcomes, including positive affect, flow, entrepreneurial initiative, lower burnout, and vocational satisfaction (Cardon, Wincent, Singh, & Drnovsek, 2009; Chen et al., in prep; Perttula & Cardon, 2011; Vallerand & Houliort, 2003). Thus far, our knowledge of passion for work comes from research that has primarily focused on defining the experience of passion towards specific work activities, entrepreneurial passion, healthy versus unhealthy types of passion, and the consequences of having passion for work (e.g., Cardon et al., 2009; Forest, Mageau, Sarrazin, & Morin, 2011; Perttula & Cardon, 2011; Vallerand & Houliort, 2003). For example, depending on how people identify with their work, their passion can take on more adaptive (harmonious) or maladaptive (obsessive) forms that facilitate or impede their work-life balance (Vallerand & Houliort, 2003).

Yet considering how much passion for work is touted in the popular literature, relatively little scholarly work has addressed how it is *attained* (Perttula & Cardon, 2011). In their recent

call for research on the topic, Perrewé and colleagues (2014) emphasize: “Although the passion that people demonstrate at work would appear to be a topic of considerable interest and importance to organizational scholars and practitioners, we know virtually nothing about it” (p. 145). In this paper, we investigate how lay people believe that passion for work is attained. Our research examines lay people’s implicitly held beliefs (“implicit theories”) about how passion for work is achieved, along with their associated expectations, choices, and outcomes.

Two Mindsets: Fit and Develop Theories

The dominant mentality in America is the belief that passion is attained through *finding* a *fit* with the right line of work: We enjoy working in vocations compatible with our true selves. This is captured in the term “*follow your passion*,” which advocates actively seeking the right fit. Since 1990, this term has increased nine-fold in English books (Google Ngram 1990-2008, Michel et al., 2011), illustrating its rising centrality in popular culture. In the scholarly literature, person-environment fit researchers similarly advise matching individuals with suitable work environments to achieve positive outcomes, including higher job satisfaction and lower psychological stress (Edwards, 2008; Kristof, 1996).

This idealistic approach, however, paints a dismal picture for those who do not find the perfect fit or even know what it is. Especially when the job market is tight, not everyone has the luxury to pick and choose the “right” vocation. Espousing what they consider a more realistic approach, some people suggest that passion for work can be *cultivated* over time in any line of work. They advocate *developing* one’s passion through mastery rather than expecting it from the outset (Newport, 2012; Tokumitsu, 2014). This developmental orientation resonates with empirical literature that focuses on how employees adjust to their companies rather than how

they select into them in the first place (e.g., Saks & Ashforth, 1997; Van Maanen & Schein, 1977).

These two different beliefs about how passion for work is attained correspond to what we term the “*fit*” and “*develop*” implicit theories. We define the fit theory as the belief that passion for work is *found* through a *fit* with the right line of work, and the develop theory as the belief that passion for work is *developed* over time in a line of work. These theories are implicit in our popular discourse, and furthermore, highlight fundamental assumptions that may also be implicit in scholarship.

General and Domain-Specific Implicit Theories

Prior research attests to the usefulness of implicit theory frameworks in understanding how people’s beliefs influence their judgments, goals, and behaviors. At a general level, there are two basic types of beliefs about people’s personalities—an entity theory is the belief that people cannot change the kind of person they are, whereas an incremental theory is the belief that people can change their dispositions (Chiu, Hong, & Dweck, 1997; Dweck, 2000). These general implicit theories about people’s personalities have significant implications, especially for social judgment. The more strongly people believe that personality is fixed, the more likely they are to expect consistency in people’s behaviors across situations and to draw dispositional inferences about others. In contrast, the more strongly people believe that personality can change, the more likely they are to take situational factors and psychological states into account in their social judgments (Chiu, Hong, & Dweck, 1997; Levy, Stroessner, & Dweck, 1998).

Apart from these domain-general beliefs, people hold other beliefs about their abilities and attributes that are domain-specific (Dweck, Chiu, & Hong, 1995a). For instance, someone can have an incremental theory about her music ability but an entity theory about her weight. In

the academic domain, students' beliefs about the malleability of intelligence affect how they explain and respond to academic setbacks (e.g., Hong, Chiu, Dweck, Lin, & Wan, 1999). Following poor performance, entity theorists who view intelligence as stable tend to construe their failure as indicative that they are not smart enough, and are consequently more likely to feel helpless and persist less in that subject area. In comparison, incremental theorists who view intelligence as malleable tend to attribute failure to a temporary lack of current ability that they can improve. These people generally respond to setbacks with greater mastery-oriented persistence than entity theorists (Dweck, 2000; Hong et al., 1999). Likewise, in weight management, believing that one's body weight is stable tends to be associated with avoidant forms of coping like giving up after a dieting setback; whereas believing that one's body weight can change tends to be associated with expectations of future success and persistence at weight regulation (Burnette, 2010).

Researchers have richly applied this implicit theories framework to many important areas of life, including morality, emotions, relationships, and stress, (e.g., Chiu, Dweck, Tong, & Fu, 1997; Crum, Salovey, & Achor, 2013; Kammrath & Peetz, 2012; Tamir, John, Srivastava, & Gross, 2007). However, despite extensive popular discourse on passion for work, lay people's implicit beliefs about how this experience is attained have yet to be examined empirically.

Our Research

Our work extends previous research on implicit theories and passion for work to test how vocational passion is achieved in the eyes of the lay person. We propose that, like beliefs about people's general dispositions, there are two basic sets of beliefs that people have about what it takes to achieve passion in their work which motivate them in different ways. Fit theorists, who believe in finding their fit with the right profession, are inclined to seek a line of work that they

enjoy from the outset—an indication of compatibility. On the other hand, develop theorists, who believe in cultivating passion through mastery of the work, prioritize initial enjoyment less in their vocational choices, presuming that passion will grow over time. Thus we would expect that, if asked to make a tradeoff between initial enjoyment and another important work goal (such as pay), fit theorists would prioritize enjoyment from the outset but develop theorists would be more willing to prioritize other vocational characteristics.

In four studies, we examined the expectations (Study 1), choices (Study 2), predictive value (Study 3), and real world implications (Study 4) associated with these *fit* and *develop* theories. Study 1 tested how fit and develop theorists' intentions to go into different lines of work are influenced by their affective forecasts. Study 2 examined how they make choices between job offers which entail tradeoffs. Study 3 evaluated how well the fit and develop theories explain important work outcomes above and beyond people's general beliefs about how much they can change. Study 4 surveyed a more representative sample of American working adults across various professions to examine how people's fit and develop theories are associated with actual work outcomes. All four studies were sufficiently powered: sample sizes were determined based on 0.80 power and small to medium effect sizes.

Pretest

We ran a pretest survey to create the implicit theory measures for the following studies. Participants filled out single-item measures, multi-item scales, and a dichotomous forced choice measure of their implicit theories of passion for work. We found consistency among these three measures, and therefore primarily used the single-item and dichotomous measures in our later studies for brevity.

Method

Ninety-eight adults (58.2% males; $M_{age} = 34.8$ years; age range: 19 – 61; USA; Mechanical Turk) completed our online survey about work attitudes. All participants filled out single item, multi-item and dichotomous forced choice measures of their implicit theories of passion for work, among other variables. These different measures were administered on separate pages of the online survey.

Single-item measures. We measured participants' endorsement of the fit theory and the develop theory using 1 (Strongly Disagree) to 5 (Strongly Agree) scales. The fit theory question read: "I believe that there is a perfect job fit for every individual, and finding the right line of work will determine one's happiness and success at work." The develop theory question read: "I believe that passion is developed through a learning process within any chosen line of work. The better one gets at one's type of work, the more one will start to love the profession."

Multi-item scales. Later in the survey, participants rated their agreement with 10 questions about their beliefs on 7-point scales: 5 about beliefs consistent with the fit theory (e.g., "Passion arises from a good match between people's interests and their work.") and 5 about beliefs consistent with the develop theory (e.g., "People have to give themselves some time to truly understand a profession—only then can they appreciate and begin to love the work."). The fit theory and develop theory questions were interspersed with one another on the same page and presented in the same order to all participants.

Dichotomous measure. On a separate page, participants had to choose between the fit theory ("Passion for work is something that you find through a fit with the right line of work.") and the develop theory ("Passion for work is something that develops as you gain competence in the line of work."). This forced choice measure was meant to identify their dominant theory. Past

literature has shown that people are generally aware of many different beliefs and can even endorse different ones at different times. However, they tend to rely on a dominant theory at any one point in time to make sense of their situations (Dweck, Chiu, & Hong, 1995b). At the end of the survey, we measured participants' demographics including their education levels.

Results and Discussion

Using all available data, we conducted an Exploratory Factor Analysis (Maximum Likelihood) with Promax rotation on the ten belief questions to test if the fit and develop theory questions loaded onto separate constructs. The resulting scree plot and extraction results yielded 3 fit theory items that accounted for one factor (13.44% of variance explained; factor loadings $> .60$) and 4 develop theory items that accounted for another (25.28% of variance explained; factor loadings $> .55$). We excluded the remaining 3 questions that did not load highly onto either of these factors (loadings $< .25$). The 7 retained questions are presented in Table 4.1S. Reliability analyses showed that the 3 fit theory items formed a reliable scale, $\alpha = .70$, as did the 4 develop theory items, $\alpha = .84$. We averaged these items to form the fit and develop theory multi-item scales, respectively.

Consistent with the popular “follow your passion” mindset in America, the vast majority (78%) chose the fit theory over the develop theory on the dichotomous measure, binomial test (.5), $p < .001$. This was consistent with higher mean endorsements of the single-item fit theory measure ($M_{fit} = 3.71$, $SD = .91$) relative to the develop theory ($M_{dev} = 3.35$, $SD = .94$) measure, paired $t(97) = 2.81$, $p = .01$, $CI_{fit-dev} [.11, .63]$, $d = .40^6$. It was also consistent with results from

⁶ Repeated measures effect sizes were calculated using the Psychometrica online calculator (Lenhard & Lenhard, 2015), which uses the Cohen's d formula recommended in Dunlap, Cortina, Vaslow, & Burke (1996).

the multi-item fit ($M_{fit} = 5.56, SD = .81$) and develop scales ($M_{dev} = 4.97, SD = 1.06$), paired $t(97) = 4.81, p < .001, CI_{fit-dev} [.35, .84], d = .63$.

Furthermore, participants' choice of dominant theory corresponded to their means on the single-item and multi-item measures (see Table 4.2). Fit theorists on the dichotomous measure consistently endorsed the fit theory more than the develop theory on both continuous measures, and vice versa.

Table 4.3 presented correlations among the measures and demographic variables. The fit and develop single-item measures did not significantly correlate with one another, nor did the multi-item scales, $ps > .10$. Unexpectedly, the fit theory multi-item scale correlated with both single-item measures; but it was only weakly associated with the develop theory single-item measure and not at all with the develop theory multi-item scale. Although we might expect generational or education level differences in endorsement of the two theories, the fit and develop measures did not significantly correlate with education level or age, all $ps > .24$.

Our findings show consistency among the three ways of measuring participants' implicit theories of passion for work. This pretest provides a repertoire of measurement methods from which our next three studies and future studies can draw. Given the consistency and relative brevity of the dichotomous and single-item measures, we adopted those measures in our next few studies.

Study 1: Expectations of Passion

Many choices, especially long-term career decisions, are influenced by people's expectations of what these choices entail. Study 1 examined how people's implicit theories influence how passionate they expect to feel towards different types of work and their intentions to go into different vocations.

We asked participants to indicate their dominant belief about how passion for work is achieved. To assess their vocational tradeoffs, participants reported how likely they were to go into an enjoyable but low-paying line of work and a less enjoyable but high-paying line of work. For each line of work, participants made two affective forecasts: a *near future forecast* about how passionate they expected to feel two weeks into the line of work, and a *distant future forecast* about how they passionate they expected to feel four years into the line of work. We expected differences between fit and develop theorists' forecasts of how passionate they would feel at both times, and that these differences would predict their intentions to go into different lines of work. In all our studies, we focused on people's tradeoffs between enjoyment and pay—the top two dominant work goals found across representative samples of workers in 7 countries, including the USA (Harpaz, 1990).

Method

We recruited 100 adults (56.0% males; $M_{age} = 31.9$ years; age range: 18 – 59; USA; Mechanical Turk) to complete our online survey about work attitudes. All participants received three separate blocks of thematically grouped questions about (1) their dominant implicit theory, (2) their responses to an enjoyable, low-paying line of work, and (3) their responses to a less enjoyable, high-paying line of work. These blocks of questions were presented in a randomized, counterbalanced order.

Participants indicated their dominant implicit theory using the dichotomous implicit theory measure described in the Pretest study. To assess people's responses towards an enjoyable, low-paying line of work, we asked our participants to think about a line of work that they enjoyed very much, but which paid a low salary. They rated how likely they were to go into this line of work (behavioral intentions) and how passionate they expected to feel after having spent

2 weeks (near future) and 4 years (distant future) in it. In a separate block of questions, they responded to the same three questions while thinking about a line of work that paid extremely well, but that they did not find very enjoyable. All ratings were made on 7-point scales (0 = Not at all, 6 = Extremely).

Results and Discussion

We did not find any significant block order effects so we ruled out the possibility that participants were merely responding consistently after they had indicated their dominant implicit theory. Supporting the prevalence of the “follow your passion” mentality in America, a greater proportion of participants subscribed to the fit theory (68%) than the develop theory (32%), binomial test (.5), $p < .001$. We present cell means and standard deviations in Table 4.4.

Consistent with our predictions, a repeated measures analysis of variance (ANOVA) showed that there was a significant Implicit Theory x Line of Work interaction, $F(1, 97) = 10.26$, $p < .01$, $\eta_p^2 = .10$. Simple contrasts showed that fit theorists had a marginally greater tendency to enter the enjoyable, low-paying line of work than the less enjoyable, high-paying line of work, $F(1, 97) = 2.87$, $p = .09$, $\eta_p^2 = .03$, [-.88, .07], whereas develop theorists showed the opposite tendency, $F(1, 97) = 7.41$, $p < .01$, $\eta_p^2 = .07$, [.25, 1.62].

How participants’ expected to feel towards these lines of work in the near and distant futures explained their behavioral intentions. A repeated measures ANOVA showed that participants’ near future forecasts were predicted by a significant Implicit Theory x Line of Work interaction, $F(1, 95) = 12.70$, $p < .01$, $\eta_p^2 = .12$. Fit theorists anticipated feeling more passionate towards the enjoyable, low-paying line of work than the less enjoyable, high-paying line of work, $F(1, 95) = 74.75$, $p < .001$, $\eta_p^2 = .44$, [1.59, 2.53], hence their preference for the former. Develop theorists, on the other hand, anticipated feeling equally passionate about both lines of work, p

= .14, [-.17, 1.24]. Thus it made sense for them to choose the higher paying one. Forecasts for the distant future showed a similar interaction pattern, $F(1, 97) = 10.93, p < .01, \eta_p^2 = .10$. After 4 years, fit theorists expected to be more passionate about the enjoyable, low-paying line of work than the less enjoyable, high-paying line of work, $F(1, 97) = 52.37, p < .001, \eta_p^2 = .35, [1.39, 2.43]$; however, develop theorists anticipated feeling equally passionate about both, $p = .33, [-.38, 1.13]$.

We tested whether forecasted passion mediated the influence of implicit theory on behavioral intentions at each time point. Bootstrapped indirect effects analyses were conducted with 1000 resamples, as recommended by Preacher and Hayes (2004). Relative to develop theorists, fit theorists were more likely to enter an enjoyable, low-paying line of work partly because they expected to feel more passionate towards it in the near future, indirect effect = -.46, $Z = -2.61, p < .01, [-.83, -.12]$ (Figure 4.1S). However, this was not driven by differences in how passionate they expected to feel in the distant future, indirect effect $p = .53, [-.48, .20]$. Relative to fit theorists, develop theorists were more likely to enter a less enjoyable, high-paying line of work because they expected to feel more passionate about it in the near future, indirect effect = .28, $Z = 2.07, p = .04, [.04, .61]$, and distant future, indirect effect = .27, $Z = 2.03, p = .04, [.03, .57]$ (Figures 4.2S and 4.3S). These results suggest that fit theorists' vocational tradeoffs may be largely driven by short-term considerations, whereas develop theorists' tradeoffs may be made with both short-term and long-term consequences in mind.

Change scores (= distant future forecast - near future forecast) showed that develop theorists expected their passion to grow over time, as we might expect. They forecasted significantly greater increases in their passion across both lines of work, relative to the expected decrements by fit theorists, (enjoyable, low-paying line of work: $M_{fit} = -.36, SD = 1.20; M_{dev}$

= .29, $SD = 1.22$, $t(96) = -2.47$, $p = .02$, $CI_{\text{fit-dev}} [-1.17, -.13]$, $d = .54$; less enjoyable, high-paying line of work: $M_{\text{fit}} = -.24$, $SD = 1.29$; $M_{\text{dev}} = .42$, $SD = 1.39$, $t(96) = -2.29$, $p = .02$, $CI_{\text{fit-dev}} [-1.23, -.09]$, $d = .50$). We found it surprising that fit theorists predicted declines in their passion for work over time—this was significantly different from zero in the enjoyable, low-paying line of work, $t(66) = -2.44$, $p = .02$, $[-.65, -.06]$, and trending but not significant in the less enjoyable, high-paying line of work, $t(66) = -1.51$, $p = .14$, $[-.55, .08]$. A possible explanation is that fit theorists may not expect their initially high levels of passion to be sustainable over a long period of time—a form of intuitive regression to the mean. Alternatively, finding a fit may emphasize one's *current* interests, which can change over time—thus, a good fit now may not be as good a fit in the future.

In a nutshell, fit theorists, who consistently expect greater passion in an enjoyable, low-paying line of work than in a less enjoyable, high-paying line of work, gravitate towards the former. In contrast, develop theorists, who expect to feel equally passionate in either vocation, are more likely to choose the higher-paying one. Develop theorists expect their passion to grow over time in any line of work, as we hypothesized; however, fit theorists, perhaps realistically, expect decrements in their passion over time. Our next study sought to understand whether these group differences in behavioral intentions extended to how people make actual choices between job offers.

Study 2: Vocational Choices

To test whether Study 1's results extended to people's actual choices, we asked participants in Study 2 to choose between two job offers. As in Study 1, these job options entailed tradeoffs on enjoyment and pay (Harpaz, 1990).

Method

We recruited 151 adults (61.6% males; $M_{age} = 32.3$ years; age range: 18 – 77; USA; Mechanical Turk). They reported their dominant implicit theory as in Study 1 and made a choice between two job offers in an online survey. Respondents chose between Company A, which “offers you a job in a line of work that pays highly. However the work does not sound very enjoyable to you,” and Company B, which “offers you a job in a line of work that you find very enjoyable. However the work does not pay well.”

Results

As in Study 1, more participants endorsed a fit theory (80.7%) than a develop theory (19.3%), binomial test (.50) $p < .001$. A chi-square test showed significant differences in job offer preferences by implicit theory, $\chi^2(1, N = 149) = 4.44, p = .04, d = .35$. Replicating Study 1, 61.2% of fit theorists chose the enjoyable, low-paying option (Company B), as compared to 39.3% of develop theorists. Again, we found that fit theorists tend to prioritize enjoyment from the outset in their vocational choices and are willing to compromise on pay for it, whereas develop theorists tend to make the opposite tradeoff.

Discussion

In sum, Studies 1 and 2 showed that implicit theories about passion for work are associated with how passionate people anticipate feeling towards different lines of work and how this impacts their vocational choices. However, our results do not differentiate these implicit theories about work from more general beliefs about whether people can change. Do these findings simply reflect people’s general theories about malleability, or do they reflect theories specific to work? In the next study, we examined whether people’s implicit theories of passion for work account for important work-relevant outcomes beyond their general implicit theories about personality.

Study 3: Differentiating from General Implicit Theories

In Study 3, our goal was to distinguish implicit theories about passion for work from general implicit theories. We examined whether these domain-specific and general beliefs were associated with one another. We predicted that people's implicit theories of passion for work would explain variance in work-relevant outcomes beyond general implicit theories.

Method

We recruited 272 adults who were working full-time in the USA (60.2% males; $M_{age} = 34.4$ years; age range: 19 – 64; USA; Mechanical Turk) to fill an online survey on attitudes about work.

Implicit theory measures. Participants reported two different types of implicit theories that they held: general “kind of person” implicit theories and domain-specific implicit theories of passion for work. Their general “kind of person” implicit theories were assessed with Dweck's (1999) 4-item scale ($\alpha = .96$). Examples of items include: “The kind of person someone is, is something very basic about them and it can't be changed very much.” and “People can do things differently, but the important parts of who they are can't be changed.” Their implicit theories of passion for work were measured with the dichotomous and single-item continuous measures described in the Pretest study.

Vocational choice. Using our Study 2 job choice measure, participants were asked to make a choice between two job offers associated with different priorities. They chose whether they preferred to join a company in a line of work that did not sound particularly enjoyable but that paid highly (Company A) or a company in a line of work that was very enjoyable but that did not pay well (Company B).

Vocational well-being measures. To assess people's actual experiences at work, we asked participants to rate how passionate they were towards their work (passion), how satisfied they felt (vocational satisfaction), and how committed they were towards their vocations (vocational commitment). People rated their passion on a 10-item Work Passion Scale ($\alpha = .96$, Chen et al., in prep; Appendix 4.BS). They reported their general vocational satisfaction in response to the question: "How satisfied are you with your current line of work?" (-3 = Very Unsatisfied, 3 = Very Satisfied). Their long-term vocational commitment was assessed through two questions adapted from Blau (1988): "I like this vocation too well to give it up." and "I definitely want a career for myself in this profession." (1 = Strongly disagree, 5 = Strongly agree; inter-item bivariate correlation: $r = .77, p < .001$).

Results and Discussion

Distribution of fit and develop theorists. Similar to previous studies, a majority (73.5%) of our American working adult participants chose the fit theory over the develop theory on the dichotomous implicit theory measure, binomial test (.5), $p < .001$. This pattern of results replicated on the continuous measures, where participants endorsed the fit theory more ($M_{fit} = 3.75, SD = .91$), on average, than the develop theory ($M_{dev} = 3.41, SD = 1.02$), paired $t(253) = 4.35, p < .001, CI_{fit-dev} [.19, .50], d = .36$.

Participants' responses on the dichotomous and continuous measures of implicit theories of passion for work were consistent. On average, those who had chosen the fit theory on the dichotomous measure gave higher ratings on the fit theory continuous measure ($M_{fit} = 3.88, SD = .83$) than on the develop theory continuous measure ($M_{dev} = 3.18, SD = 1.02$), paired $t(184) = 8.15, p < .001, CI_{fit-dev} [.53, .87], d = .75$. Those who had chosen the develop theory on the dichotomous measure gave higher ratings on the develop theory continuous measure ($M_{dev} = 4.04,$

$SD = .68$) than the fit theory continuous measure ($M_{fit} = 3.40$, $SD = 1.05$), paired $t(66) = -5.20$, $p < .001$, $CI_{fit-dev} [-.89, -.40]$, $d = .71$. The fit and develop theory continuous measures were weakly correlated with one another, $r = .14$, $p = .03$.

Differentiating implicit theories of passion for work and general implicit theories.

Neither the fit theory ($r_{fit} = -.06$) nor the develop theory ($r_{dev} = .11$) measures were significantly correlated with the general implicit theory measure, both $ps > .05$. These results suggest that they do not measure the same construct. Although prior literature has found that some domain-specific implicit theory measures, such as those on intelligence and morality, are positively and weakly associated with the general implicit theory measure (Dweck et al., 1995a), our fit and develop theories of passion for work seem to be tapping into separate psychological mechanisms.

Vocational choices. First, we examined whether endorsements of the fit and develop theories explain people's vocational choices above and beyond general implicit theories about people's personalities. To replicate our Study 2 findings, we performed a hierarchical logistic regression of job offer choice on the general implicit theory measure (step 1) and the dichotomous implicit theory of passion for work measure (step 2). People's general implicit theories were not associated with their choices between the two lines of work, $B = -.04$, $Wald(1) = .11$, $p = .74$, $Exp(B) = .96$, $CI_{Exp(B)} [.78, 1.20]$ ⁷. Importantly, participants' implicit theories of passion for work significantly explained their vocational choices, $B = -.96$, $Wald(1) = 10.34$, $p < .01$, $Exp(B) = .38$, $CI_{Exp(B)} [.21, .69]$. As we found in Study 2, those with a dominant fit theory (68.3%) were more likely than those with a dominant develop theory (46.3%) to choose the company associated with an enjoyable though poorly paying line of work, and vice versa.

⁷ In reporting regression analyses, we use "B" to represent unstandardized beta coefficients throughout the manuscript.

Vocational well-being. Next, we considered whether people's endorsements of the fit and develop implicit theories explained work-relevant outcomes beyond their general implicit theories. We regressed people's self-reported passion, vocational satisfaction, and vocational commitment on their general implicit theories (step 1) and their fit and develop theories (step 2). Table 4.5 presents the results of our hierarchical multiple regressions.

Passion. We expected people's fit and develop theories to account for a significant amount of variance in experienced passion above and beyond their general implicit theories. First, people's general implicit theories were not significantly associated with their passion for work, $B = .04, t = .85, p = .40, CI_B [-.06, .14]$. Controlling for the effects of their general implicit theories, people's endorsements of the fit theory, $B = .19, t = 3.01, p < .01, CI_B [.06, .31]$, and the develop theory, $B = .27, t = 4.82, p < .001, CI_B [.16, .38]$, were both significantly associated with how passionate people felt towards their work. Supporting our predictions, working adults' implicit theories of passion uniquely explained 14.1% of variance in their passion for work beyond their general implicit theories, $F_{change}(2, 224) = 18.48, p < .001$.

Satisfaction. The pattern of results replicated with vocational satisfaction. People's general implicit theories were not significantly associated with their reported vocational satisfaction, $B = .11, t = 1.28, p = .20, CI_B [-.06, .29]$. Controlling for their general implicit theories, their endorsements of the fit theory, $B = .23, t = 2.13, p = .03, CI_B [.02, .45]$, and the develop theory, $B = .54, t = 5.46, p < .001, CI_B [.34, .73]$, were associated with how satisfied they were. People's implicit theories of passion uniquely explained 13.5% of variance in their vocational satisfaction beyond their general implicit theories, $F_{change}(2, 242) = 19.04, p < .001$.

Commitment. We found similar results for working adults' vocational commitment. People's general implicit theories were not significantly associated with their vocational

commitment, $B = .03$, $t = .35$, $p = .72$, $CI_B [-.11, .16]$. Controlling for these general beliefs, their endorsements of both the fit theory, $B = .19$, $t = 2.08$, $p = .04$, $CI_B [.01, .36]$, and the develop theory, $B = .32$, $t = 4.03$, $p < .001$, $CI_B [.16, .48]$, were significantly associated with how committed people felt towards their vocations. People's implicit theories of passion for work uniquely explained 8.9% of variance in how committed they felt beyond their general implicit theories, $F_{change}(2, 239) = 11.69$, $p < .001$.

Finally, we analyzed correlations among measures of people's fit theory endorsement, develop theory endorsement, education level, and age (Table 4.6). Higher endorsements of the fit theory were negatively and weakly correlated with education level, $r = -.15$, $p = .02$. There were no other significant correlations among the measures. Since these results were inconsistent with the lack of association among these measures in the Pretest, where we found no significant correlations between participants' fit theory endorsements and their education levels, we attempted to replicate them in the next study.

Discussion

Thus far, our findings show that people's vocation-related forecasts, choices, and even outcomes are associated with their implicit theories about passion for work. Working adults' endorsements of the fit and develop theories significantly explain their vocational choices and outcomes, above and beyond their general implicit theories. In fact, people's general implicit theories did not relate to any of the work outcomes that we measured. Our results highlight that people's implicit beliefs about work are not just an extension of their implicit theories about people in general. Rather, these fit and develop theories can help us better understand how people make decisions about their professions that affect their well-being.

Having mainly focused on hypothetical scenarios in Studies 1 and 2, the next study sought to extend Study 3's findings further by examining the relation between people's implicit theories and vocational outcomes in their actual lines of work. We surveyed a more representative sample of American working adults from various professions and asked them to share their beliefs and actual work experiences.

Study 4: Real World Working Adults

We examined how implicit theories of passion for work are related to various outcomes on the job with a more representative sample of American working adults. Additionally, we wanted to examine one main difference between the two mindsets—how much they emphasize *compatibility* with their lines of work. Do fit theorists go into lines of work that they think they are suited for from the outset? Do develop theorists' perceived fit with their lines of work increase over time, as we found with their passion forecasts in Study 1? By extension, how might fit and develop theorists' perceptions of fit with their current lines of work affect their feelings towards their vocations? For instance, do fit theorists feel less passionate about a line of work that they do not think matches well with their current interests, and more passionate about a line of work that they think does? Compared to fit theorists, are develop theorists' passion less strongly dependent on their perceptions of compatibility with their lines of work? Finally, we also tested whether people's work well-being and success on the job were associated with their fit and develop theories.

Method

As part of a larger work attitudes survey, 271 USA citizens and permanent residents who were working full-time or part-time in the USA (48.3% male, 1.5% unreported. $M_{age} = 40.9$ years) responded to our survey questions. We recruited them from a variety of vocations through

a professional survey sampling company. The targeted sample size was 300, but not all who participated met our criteria. Demographic descriptives and data exclusion criteria are included in Table 4.7S and the Appendix 4.AS, respectively.

Implicit theory measures. Participants filled out the same dichotomous and single-item implicit theory measures used in previous studies.

Vocational priorities. To assess their priorities, participants were asked to make a tradeoff between enjoyment and pay. They were asked to indicate where their preference fell along a continuum between a line of work that they found enjoyable and a line of work that paid well (“Suppose you had to choose between a line of work that you find very enjoyable and a line of work that you think pays well. On the scale below, please indicate where your preference falls.”; 1 = Enjoyable line of work; 6 = Line of work that pays well).

Perceived Fit. To assess subjective compatibility, we measured participants’ perceived current fit with their vocations (current fit) and their perceived fit with their vocations when they first started (starting fit). Current fit was measured with two questions: “How good a fit do you think there is between you and your current line of work now?” (1 = Very poor fit; 7 = Very good fit) and “How well-suited do you think you are for this line of work now?” (1 = Not at all suited; 5 = Perfectly suited). Because these two items were highly correlated ($r = .74, p < .001$) and on different scales, we converted each scale rating into a proportion (e.g., 4/7 and 3/5) and summed the two proportions to create our composite measure of current fit (with a maximum value of 2). Starting fit involved two similar, highly correlated questions measuring perceived fit when they first started in their lines of work ($r = .62, p < .001$). We collapsed them to form our composite measure of starting fit.

Outcome measures of well-being and success. Participants' reported their work well-being and success through a number of measures. They reported how passionate they were towards their work on the Work Passion Scale used in Study 3 and how satisfied they were in their lines of work on a 4-item Vocational Satisfaction scale (adapted from the Satisfaction With Life Scale; Diener, Emmons, Larsen, and Griffin, 1985). Examples of items include: "I am satisfied with my line of work" and "So far I have gotten the important things I value in my line of work." This multi-item vocational satisfaction scale ($\alpha = .91$) was used as a more comprehensive measure than the single vocational satisfaction question administered in Study 3. To measure subjective and objective success, we had participants rate how successful they thought they were in their work ("How successful or unsuccessful would you say you are in your work?"; 1 = Very unsuccessful to 7 = Very successful) and report their annual income range (12 brackets ranging from "less than \$10,000" to "\$150,000 or more").

Results and Discussion

Distribution of fit and develop theorists. Replicating previous studies, a majority of 69.9% chose the fit theory over the develop theory, binomial test (0.5), $p < .001$. On the continuous measures, participants also endorsed the fit theory ($M = 4.05$, $SD = .86$) more than the develop theory ($M = 3.81$, $SD = .97$), paired $t(270) = 3.75$, $p < .001$, $CI_{\text{fit-dev}} [.11, .36]$, $d = .26$.

On average, participants' ratings on the dichotomous measure were consistent with their ratings on the continuous measures. Those who chose the fit theory on the dichotomous measure rated significantly greater endorsement on the continuous fit theory measure ($M = 4.14$, $SD = .85$) than the develop theory measure ($M = 3.71$, $SD = 1.00$), paired $t(187) = 5.66$, $p < .001$, $CI_{\text{fit-dev}} [.28, .58]$, $d = .47$. Those who chose the develop theory on the dichotomous measure rated

significantly greater endorsement with the continuous develop theory measure ($M = 4.05$, $SD = .85$) than the fit theory measure ($M = 3.84$, $SD = .86$), paired $t(80) = -2.12$, $p = .04$, $CI_{\text{fit-dev}} [-.41, -.01]$, $d = .27$.

Vocational priorities. When asked to make a trade-off between enjoyment and pay, what would fit and develop theorists prioritize? As in our previous studies, fit theorists preferred an enjoyable line of work ($M = 3.37$, $SD = 1.59$), whereas develop theorists preferred a well-paying line of work ($M = 3.86$, $SD = 1.45$), $t(265) = -2.40$, $p = .02$, $[-.90, -.09]$, $d = .32$.

Perceived fit. Do fit theorists self-select into lines of work that they perceive as fitting their interests, whereas develop theorists mature in fit over time? To test this, we ran a repeated measures ANOVA, which yielded a significant Implicit Theory X Change in Fit interaction, $F(1, 261) = 6.82$, $p = .01$, $\eta_p^2 = .03$ (Figure 4.4). Consistent with the argument that fit theorists self-select into better-fitting vocations from the outset, they rated higher starting fit with their lines of work than develop theorists, $F(1, 261) = 9.62$, $p < .01$, $\eta_p^2 = .04$, $[.05, .24]$. However, both fit and develop theorists reported similar levels of current fit, $p = .75$, $[-.09, .12]$. This was because, over time, develop theorists increased in fit significantly more than fit theorists, $t(261) = -2.61$, $p = .01$, $[-.23, -.03]$, $d = .35$. Regardless of their implicit theory, the higher people's perceived starting fit ($r = .60$, $p < .01$) and current fit ($r = .83$, $p < .01$), the more passionate they felt towards their vocations.

The fit theory suggests that fit theorists' experiences of passion are very much tied to their perceived compatibility with their lines of work. Develop theorists, however, may not emphasize compatibility as much, although their experiences at work could certainly benefit from it. Therefore, we expected that fit theorists' perceptions of starting fit are more strongly associated with how passionate they are about their work compared to that of develop theorists.

Multiple regression analysis supported our prediction. There was a significant Implicit Theory x Starting Fit interaction on people's work passion, controlling for each main effect, $B = -.26$, $t(244) = -2.00$, $p < .05$, $CI_B [-.506, -.003]$ (Figure 4.5). The interaction and main effects accounted for 36.6% of the total variance in people's reported passion, model $F(3, 244) = 46.98$, $p < .001$. Fit theorists experienced very low levels of passion when starting fit was low and were extremely passionate at high levels of starting fit, $B = 1.62$, $t(171) = 10.21$, $p < .001$, $CI_B [1.30, 1.93]$. Develop theorists showed a similar pattern of results, but the impact of starting fit on their experienced passion was more modest, $B = 1.11$, $t(73) = 5.84$, $p < .001$, $CI_B [.73, 1.49]$. This same interaction pattern emerged between implicit theory and current fit; the interaction was marginally significant controlling for both main effects, $B = -.15$, $t(245) = -1.88$, $p = .06$, $CI_B [-.30, .01]$.

Effects on well-being and success. Given the different motivational patterns of fit and develop theorists, we examined whether there were any differences in well-being and success. Fit and develop theorists reported similar levels of experienced passion, vocational satisfaction, subjective professional success, and annual income, all $ps > .20$.

We further analyzed correlations between the continuous implicit theory measures and outcome variables (Table 4.8 presents correlations and partial correlations). Williams' tests for comparing dependent correlations (Williams, 1959; Steiger, 1980) showed that there were no significant differences in how strongly each implicit theory was associated with passion and satisfaction, Williams' test $ps > .05$. Hence, both implicit theories were effectively associated with vocational well-being although they facilitated different paths to these outcomes. Interestingly the develop theory was more strongly correlated with subjective professional success, Williams' $t(239) = -2.57$, $p = .01$ —perhaps because higher endorsements of the develop

theory might be associated with expecting more success from higher investments of effort. Neither theory was significantly correlated with income. This lack of association is not surprising, given that these are theories about how passion for work is achieved, rather than how financial success is achieved. Thus, financial success can occur regardless of how people believe passion is attained.

Implicit theories and background factors. Do people's implicit theories reflect natural preferences, or are these beliefs a luxury that some people but not others can afford? Framed differently, is the fit theory a belief that only people of higher socioeconomic status or education level are in a position to hold? Our results showed that these beliefs are not a function of socioeconomic background. Annual household income provided by the survey sampling company was not significantly associated with people's endorsements of either implicit theory, $ps > .05$. Similarly, there were no significant correlations between working adults' education levels and either implicit theory (Table 4.8). These results suggest that the fit and develop theories may be widely held beliefs among American working adults regardless of their socioeconomic standing. Furthermore, these beliefs about work may not be inculcated through the education system, but propagated more through the popular media and socio-cultural norms.

Lastly, we suspected that endorsements of the fit theory may be a more recent phenomenon, and tested whether there were generational or cohort differences in implicit theories. We did not find a significant association between age and endorsements of either implicit theory (Table 4.8). These somewhat counter-intuitive results may attest to the extensive influence of today's popular view about finding one's fit with a line of work. As with household income and education level, it seems that age is not associated with how much people endorse one theory or the other about achieving passion at work. Nevertheless, our cross-sectional studies

should be supplemented in the future by longitudinal surveys that can more rigorously test how people's backgrounds influence the implicit theories they hold.

General Discussion

Vocational passion has become an increasingly important topic for people ranging from high school and college graduates to those experiencing mid-life crises. Yet little research has been done on the topic of vocational passion, let alone on how it is attained (Perttula & Cardon, 2011; Perrewé et al., 2014). To shed light on this issue, we examined lay people's implicit beliefs about how passion for work is achieved. We categorized lay people's beliefs implicit in American popular discourse and scholarship into the fit and develop theories, and examined the implications of these beliefs for people's vocational expectations (Study 1), choices (Studies 2 & 3), and outcomes (Studies 3 & 4).

Although most Americans believe that passion comes from finding the right fit, our results suggest that this is not the only route to attain passion. Rather, people can achieve similar levels of well-being at work by endorsing either the fit or develop theory. The key difference lies in *how* these outcomes are attained: fit theorists tend to self-select into lines of work that fit them from the start, whereas develop theorists cultivate passion over time.

When making tradeoffs, fit theorists tend to prioritize enjoyment at the expense of good pay, because they expect to feel consistently more passionate towards lines of work that they enjoy from the outset than towards higher-paying but less enjoyable lines of work. Thus, fit theorists tend to self-select into lines of work that they think they enjoy and fit with from the start. Their passion towards their work strongly relates to how compatible they think they are with their vocations. Because develop theorists anticipate their passion to increase over time, they are generally more willing to prioritize goals other than immediate enjoyment in their

vocational choices. Compared to fit theorists, develop theorists' passion for work is less strongly related to how well they think they fit with their vocations. Moreover, develop theorists report growing to fit their vocations better over time.

Importantly, people's fit and develop theories explain important work outcomes, including vocational passion, satisfaction, and commitment, above and beyond their general implicit theories. Whether these fit and develop theories are related to beliefs about fit and growth in other domains, such as relationships (e.g., Knee, 1998), remains an open question that future research may explore.

Our studies found that people's endorsements of the fit and develop theories were positively but weakly correlated with one another (Studies 3 & 4). This suggests that they are not necessarily mutually exclusive opposites, as many other implicit theories (for e.g., intelligence, willpower, and personality) have been conceptualized (see Knee, 1988, for an exception). People are able to agree with both fit and develop theories at the same time, but can also hold a more salient dominant theory that motivates their preferences and choices.

Limitations and Future Directions

Because our findings are correlational, more research is needed to establish causality. Ongoing research is attempting to manipulate the fit and develop theories to provide causal evidence of the role of implicit theories in vocational choices and outcomes. These experiments could be further complemented by longitudinal studies that address how fit and develop theories are acquired and the functions that they play in people's relations with their work.

Although we focused on positive work outcomes in this paper, future research can examine how these implicit theories might be associated with negative outcomes. In prior research, downsides to an entity theory include earlier withdrawal from difficulties and vengeful

responses to peer conflict (e.g., Burnette, 2010; Yeager, Trzesniewski, Tirri, & Dweck, 2011). Fit theorists may construe any dissatisfaction or professional setback as an indication of poor fit with their lines of work, and therefore more easily conclude that they should consider changing careers. However, an incremental theory has its drawbacks too—develop theorists may stay in professions that poorly match their interests and abilities for too long, which could be taxing to their psychological well-being (Wrosch, Scheier, Miller, Schulz, & Carver, 2003).

Our findings show that both beliefs can be adaptive. Yet it is also possible that one theory might be more advantageous over the other under certain circumstances. For instance, the fit theory might more efficiently enable passion when one can sample from multiple alternative options, but the develop theory might be more adaptive with few alternatives. More research could examine the situational variables that make one theory more effective than the other.

Practical Implications

From a practical standpoint, the fit-develop theory framework provides preliminary guidelines for advice giving and receiving. In an age of increasing awareness towards mid-life and even “quarter-life” crises (an early form of mid-life crises gaining prevalence among adolescents; Arnett, 2007; Robbins & Wilner, 2001), people are seeking successful approaches to inform their vocational choices. One approach has been to change people’s beliefs to effectively modify their strategies and outcomes (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2000). Our research offers a complementary approach—to tailor strategies to people’s existing beliefs and priorities. Especially if people’s implicit theories about a particular domain are difficult to change, proposing belief-congruent means by which they can achieve their desired ends can be helpful. For example, fit theorists may be more receptive to the use of personality tests in personnel selection and career guidance. However, develop theorists may

relate better to an emphasis on organizational socialization and training opportunities. Overall, interventions built on our framework could fruitfully inform career advising, life coaching, mentorship, and employment policies.

Conclusion

In conclusion, people who have not found their “perfect fit” in a career can take heart—there is more than one way to attain passion for work. Contrary to popular wisdom, a love-at-first-sight experience is not necessary. The good news is that we can choose to change our beliefs or strategies to cultivate passion gradually or seek compatibility from the outset, and be just as effective in the long run at achieving this coveted experience.

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Table 4.1S

Pretest Study Fit and Develop Theory Retained Scale Questions and Their Factor Loadings using Exploratory Factor Analysis (Maximum Likelihood) with Promax Rotation.

Question	Factor loading	Corrected Item-total correlation
Fit theory scale		
Being happy at work has to follow from being in the line of work that is suitable to one's personality.	.613	.512
I believe that there is a line of work that is the right fit for each person.	.729	.513
Passion arises from a good match between people's interests and their work.	.657	.533
Develop theory scale		
I believe that people can become much more interested in a profession over time, even though they may not like it from the outset.	.861	.735
People can develop passion towards their professions as they get better at their work over time.	.879	.773
People often grow to become passionate about their profession even though they may not love it from the outset.	.777	.709
People have to give themselves some time to truly understand a profession - only then can they appreciate and begin to love the work.	.557	.497

Note: Factors were correlated lowly with one another, $r = .12$.

Table 4.2.

Pretest Correspondence between Participants' Dominant Theory Choice and Their Ratings on the Continuous Measures.

	Dichotomous, force choice measures	
<i>Single-item measures</i>	Fit theorist	Develop theorist
Fit theory	3.88(.82)	3.14(.99)
Develop theory	3.14(.92)	4.05(.65)
Paired t-test	$t(75) = 5.78, p < .001, [.48, .99]$	$t(21) = -4.00, p < .01, [-1.38, -.44]$
<i>Multi-item scales</i>		
Fit theory scale	5.62(.84)	5.38(.73)
Develop theory scale	4.73(1.01)	5.78(.81)
Paired t-test	$t(75) = 6.71, p < .001, [.62, 1.15]$	$t(21) = -2.04, p = .05, [-.82, .01]$

Note. Single-item measures were rated on 5-point response scales; multi-item measures were rated on 7-point response scales.

Table 4.3.

Pretest Correlations among the Continuous, Single-Item, and Multi-Item Measures and Demographic Variables.

	1	2	3	4	5	6
1. Fit single-item measure	-					
2. Develop single-item measure	.02	-				
3. Fit theory scale	.58**	.23*	-			
4. Develop theory scale	-.13	.68**	.17	-		
5. Education level	.03	.07	-.04	.04	-	
6. Age	.06	.11	.04	.08	.12	-

Note. * $p < .05$. ** $p < .01$.

Table 4.4.

Study 1 Means and Standard Deviations for Fit and Develop Theorists' Behavioral Intentions and Affective Forecasts.

	Fit theory $M(SD)$		Develop theory $M(SD)$	
	Enjoyable, Low-paying	Less enjoyable, High-paying	Enjoyable, Low-paying	Less enjoyable, High-paying
Behavioral Intention	4.50(1.26)	4.10(1.41)	4.13(1.31)	5.06(1.05)
Near Future Forecast	5.34(1.33)	3.28(1.14)	4.48(1.53)	3.90(1.30)
Distant Future Forecast	4.94(1.34)	3.06(1.52)	4.75(1.52)	4.38(1.64)

Table 4.5.

Study 3 Hierarchical Multiple Regression of People's General Implicit Theories, Fit Theory Endorsement, and Develop Theory Endorsement on Each Work Outcome: Passion, Satisfaction, and Commitment.

Passion	ΔR^2	F_{change}	B	SE	t	95%CI
Step 1	.00	.39				
General implicit theory			.04	.05	.85	[-.06, .14]
Step 2	.14**	18.48				
General implicit theory			.03	.05	.68	[-.06, .12]
Fit theory			.19**	.06	3.01	[.06, .31]
Develop theory			.27**	.06	4.82	[.16, .38]
Satisfaction	ΔR^2	F_{change}	B	SE	t	95%CI
Step 1	.01	1.63				
General implicit theory			.11	.09	1.28	[-.06, .29]
Step 2	.14**	19.04				
General implicit theory			.08	.08	.91	[-.09, .24]
Fit theory			.23*	.11	2.13	[.02, .45]
Develop theory			.54**	.10	5.46	[.34, .73]
Commitment	ΔR^2	F_{change}	B	SE	t	95%CI
Step 1	.00	.13				
General implicit theory			.03	.07	.35	[-.11, .16]
Step 2	.09**	11.69				
General implicit theory			.01	.07	.10	[-.13, .14]
Fit theory			.19*	.09	2.08	[.01, .36]
Develop theory			.32**	.08	4.03	[.16, .48]

Note. * $p < .05$. ** $p < .01$. Confidence intervals are for the unstandardized B coefficients.

Table 4.6.

Study 3 Correlations among the Fit and Develop Theories and Demographic Variables.

	1	2	3	4
1. Fit theory scale	-			
2. Develop theory scale	.14*	-		
3. Education level	-.15*	.11	-	
4. Age	0	-.10	.17**	-

Note. * $p < .05$. ** $p < .01$.

Table 4.7S.

Study 4 Survey Respondents Demographics.

Demographic	<i>N</i>	Percentage (%)	Mean (SD)	Range
Age			40.9(12.7)	18 - 64
Gender				
Male	146	48.2		
Female	148	48.8		
Unreported	9	3.0		
Race				
White	190	62.7		
African American	29	9.6		
Asian	34	11.2		
American Indian or Alaska Native	2	0.7		
Native Hawaiian or Other Pacific Islander	4	1.3		
Other	9	3.0		
Work Status				
Full-time	277	91.4		
Part-time	11	3.6		
Gross Yearly Household Income				
< \$20,000	15	5.0		
\$20,000 - \$29,999	25	8.3		
\$30,000 - \$39,999	35	11.6		
\$40,000 - \$49,999	27	8.9		
\$50,000 - \$59,999	44	14.5		
\$60,000 - \$74,999	53	17.5		
\$75,000 - \$99,999	54	17.8		
\$100,000 - \$149,999	30	9.9		
\$150,000 +	19	6.3		
Unreported	1	0.3		
Highest Education Level				
Completed some high school	6	2.0		
High school graduate	29	9.6		
Completed some college	84	27.7		
College degree	117	38.6		
Completed some postgraduate	13	4.3		
Master's degree	43	14.2		
Doctorate, law, or professional degree	11	3.6		

Table 4.8.

Study 4 Correlations between Continuous Implicit Theory Measures and Work Outcomes using All Available Data.

	1	2	3	4	5	6	7	8
1. Fit	-							
2. Develop	.36**	-						
3. Passion	.33**	.36**	-					
4. Vocational satisfaction	.32**	.40**	.84**	-				
5. Subjective success	.08	.27**	.40**	.39**	-			
6. Income	.02	.12	.08	.12	.06	-		
7. Education level	-.12	.00	.10	.12	.09	.35**	-	
8. Age	-.07	.03	.05	.01	.05	.08	-.08	-
Partial correlations controlling for develop theory endorsement								
1. Fit	-							
2. Passion	.23**	-						
3. Vocational satisfaction	.21**	.82**	-					
4. Subjective success	-.02	.34**	.32**	-				
5. Income	-.03	.04	.08	.03	-			
6. Education level	-.12	.11	.13*	.09	.35**	-		
7. Age	.08	.04	.00	.05	.08	-.08	-	
Partial correlations controlling for fit theory endorsement								
1. Develop	-							
2. Passion	.28**	-						
3. Vocational satisfaction	.32**	.82**	-					
4. Subjective success	.26**	.40**	.39**	-				
5. Income	.12	.08	.12	.06	-			
6. Education level	.05	.15*	.17**	.10	.36**	-		
7. Age	.05	.08	.04	.06	.08	-.09	-	

Note. * $p < .05$. ** $p < .01$.

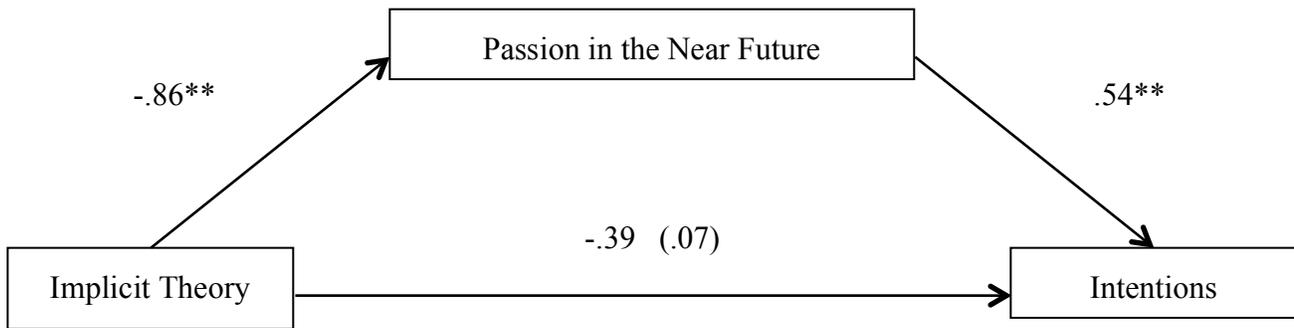


Figure 4.1S. Mediation of the effect of implicit theory (0 = fit theory, 1 = develop theory) on behavioral intention to enter an enjoyable, low-paying line of work by passion forecasted in the near future. Unstandardized coefficients reported. $^{**}p < .001$.

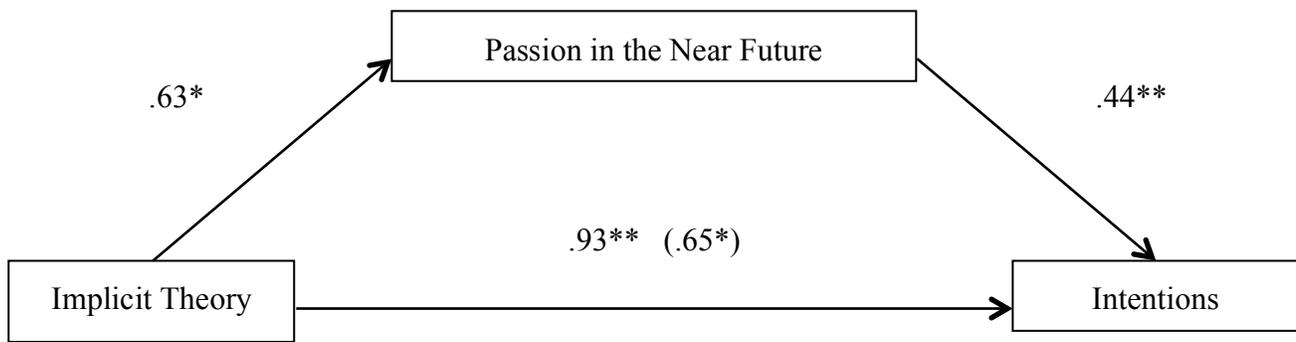


Figure 4.2S. Mediation of the effect of implicit theory (0 = fit theory, 1 = develop theory) on behavioral intention to enter a less enjoyable, high-paying line of work by passion forecasted in the near future. Unstandardized coefficients reported. * $p < .05$. ** $p < .001$.

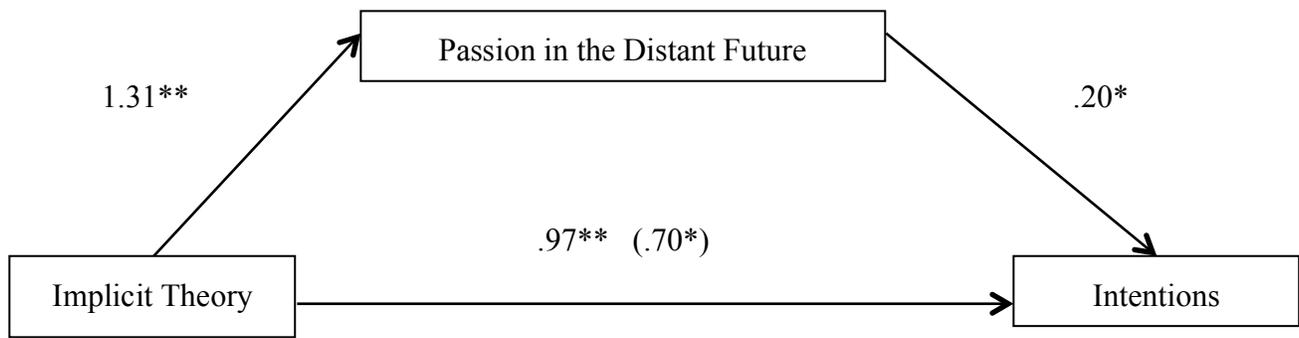


Figure 4.3S. Mediation of the effect of implicit theory (0 = fit theory, 1 = develop theory) on behavioral intention to enter a less enjoyable, high-paying line of work by passion forecasted in the distant future. Unstandardized coefficients reported. * $p < .05$. ** $p < .001$.

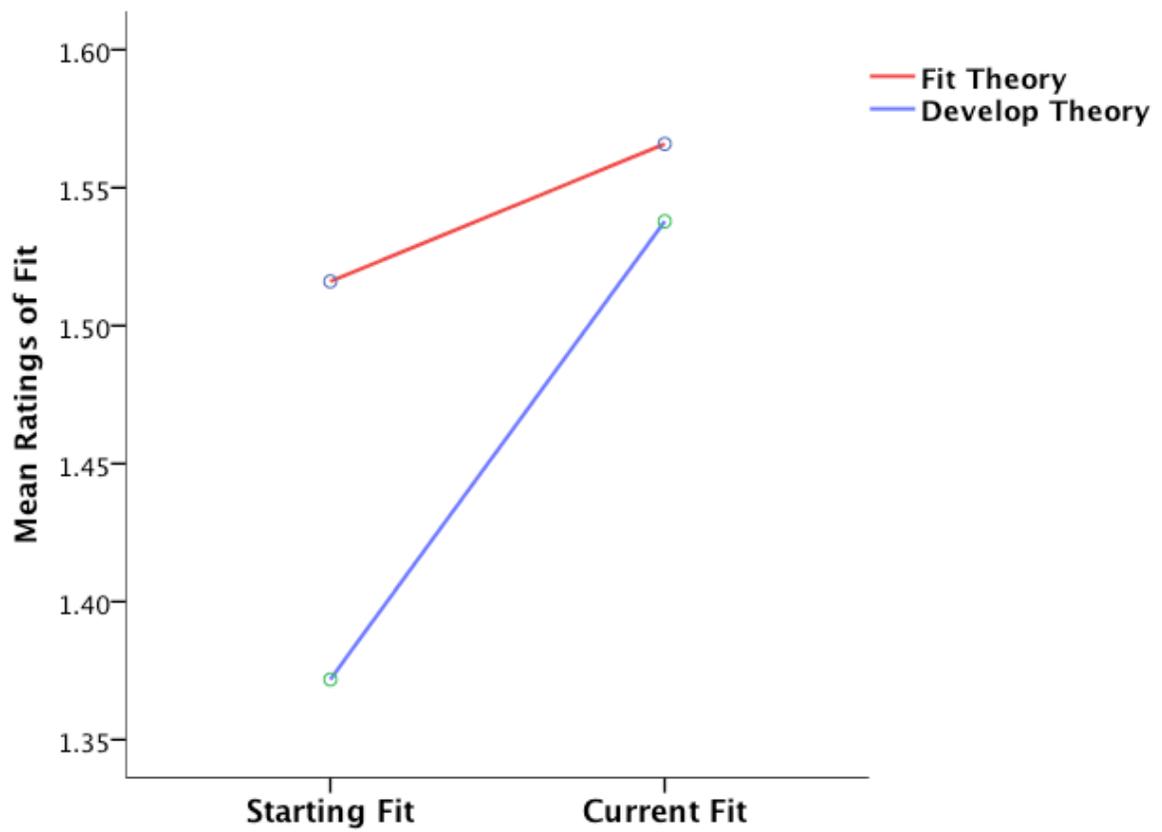


Figure 4.4. Study 4 Implicit Theory X Change in Fit interaction showing how fit theorists report greater perceived fit with their lines of work at the start, but develop theorists catch up with them over time.

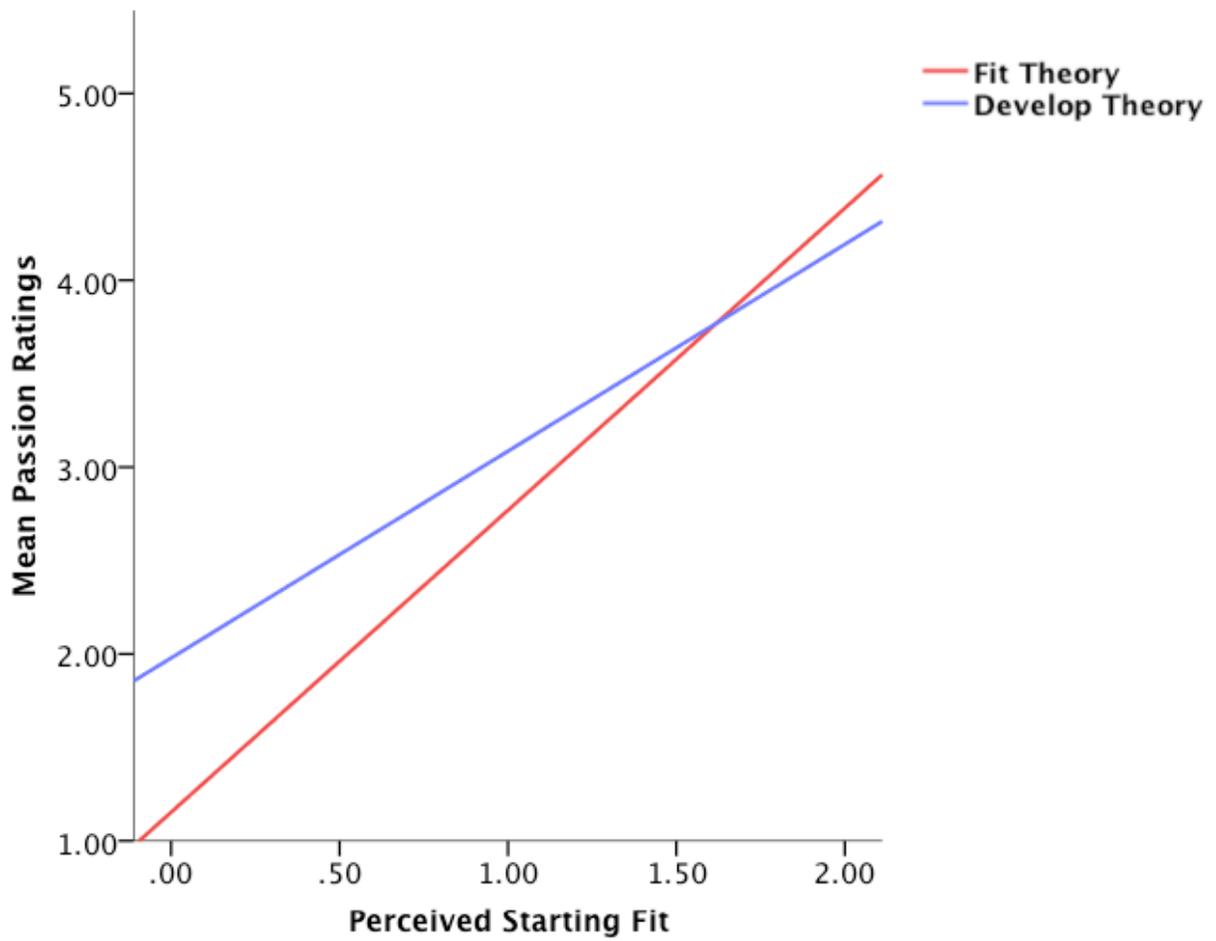


Figure 4.5. Study 4 Implicit Theory x Perceived Starting Fit interaction on experienced passion. Fit theorists' perceptions of starting fit with their lines of work were more strongly associated with their experienced passion than develop theorists' perceptions of starting fit. Mean work passion ranged from 1 to 5; perceived starting fit ratings ranged from 0 to 2.

Appendix 4.AS

Study 4 Exclusion Criteria

Because our measures were part of a larger work attitudes survey, we followed the exclusion criteria used in the larger survey to ensure the quality of the data and accuracy of any conclusions drawn. An original 303 participants from the USA started the survey, although not all were technically eligible by the recruitment criteria and some gave responses that made their data quality suspect. Our exclusion criteria were designed to identify and filter out those responses. We excluded 6 participants who indicated that they were not working at all (e.g. full-time students), 1 who did not list a line of work, 20 participants who gave nonsensical answers (e.g. “jhbjhbjb”) to more than one open-ended question in the larger survey, and 5 who were suspected of not taking the survey seriously (e.g. answering “NA” to almost all the open-ended questions). Using these criteria, we ensured – as much as possible – that anyone included took the survey seriously, was working at least part-time, and responded to the Work Passion Scale items with their line of work in mind. This ensured the quality of our results, interpretations, and conclusions.

Appendix 4.BS

Work Passion Scale

(Chen, Ellsworth, Schwarz, & Lim, in preparation)

Items	Scale Options
1. How much would you say you love doing your work?	1 (Not At All) - 5 (Extremely)
2. How often do you feel positively about your work?	1 (Never) - 5 (All of the Time)
3. How important would you say your work is to you?	1 (Not At All) - 5 (Extremely)
4. How often would you say that you wake up in the morning looking forward to working?	1 (Never) - 5 (All of the Time)
5. How much would you say you enjoy doing your work?	1 (Not At All) - 5 (Extremely)
6. How central is your work to who you are?	1 (Not At All) - 5 (Extremely)
7. How much time do you spend thinking about your work because you enjoy it, not because you have to?	1 (Never) - 5 (Most of the Time)
8. How fast does time seem to pass when you are fully engaged in your work? *We are interested in your subjective feeling of how fast time passes.	1 (Slows to a Crawl) - 5 (Flies by Quickly)
9. To what extent is the work fulfilling to you?	1 (Not At All) - 5 (Extremely)
10. How motivated are you to do a good job at work?	1 (Not At All) - 5 (Extremely)

Note: The scale should best be preceded by instructions that focus people on their current line of work. The following question and instructions were used in our survey:

“What is your current line of work? By line of work, we mean the profession that you are in or the type of industry that you associate yourself with. For example, you could be in academia, carpentry, journalism, etc. Please write down your current line of work.”

“Now, we will ask you about your attitudes towards your line of work. Thinking about your line of work...”

CHAPTER 5

Integrating Lay Theories of Personal and Situational Changeability:

The Self by Situational Change Model of Lay Theories

Abstract

The lay theories literature has thus far focused on people's beliefs about the stability or malleability of their personal attributes, or "self theories." Comparatively less research has examined and discussed the implications of people's fundamental assumptions about their external contexts, or "situation theories." This paper highlights the motivational implications of both types of lay theories, proposes that they play complementary roles in motivating change, and introduces a new Self by Situation Change (SSC) framework which describes how they can combine in context to produce different response orientations. The SSC framework offers testable predictions and theoretical implications for lay theory research and beyond.

The Self by Situational Change Model of Lay Theories:

Integrating lay theories of personal and situational changeability.

Consider two students: Tom and Sue both receive news that they did not do well on a recent class test. Both are equally disappointed and know that they cannot do anything about their grades at this point. Tom, who believes that his ability is stable and innate, perceives the low test score as a sign that he may not be cut out for the subject, and decides to subsequently invest less time in it relative to his other school subjects. Sue, who believes that she can cultivate her ability through effort, attributes her current grades to insufficient investment on her part. Thus, she reacts to the news by resolving to develop her ability by doubling her efforts and time in the subject. These two students embody a key distinction in the research literature, which contrasts a fixed, innate conception of personal attributes (“entity theory”) and its malleable, dynamic counterpart (“incremental theory;” Dweck, 2000; Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988; Ross, 1989). The distinction between entity and incremental beliefs has been well-established in psychological literature (Burnette, O’Boyle, VanEpps, Pollack, & Finkel, 2013; Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988; Molden & Dweck, 2006).

Relatively less discussed in prior theorizing, however, is a key factor that predicts how Tom and Sue react to the disappointing news—their belief that *they cannot do anything about their class*. In other words, Tom and Sue believe that their situations are unchangeable. Consider two other students who seem to have the opposite mentality: Patrick and May similarly receive disappointing news about their poor performance on a recent class test. Both of them, however, do not view their class structure as rigid, but instead believe in its possible flexibility to accommodate their needs as students. Patrick firmly believes that his ability on multiple-choice questions, which dominated the last class test, is not particularly good, but knows that he

performs well on group projects. He is motivated to persuade his teacher to add more graded group assignments to the class. Therefore, he reacts to the disappointing news by trying to convince his teacher that the class should be structured to accommodate various kinds of students with different strengths (like himself). In contrast, May believes that she can work on her current knowledge of the class content, but also recognizes that her teacher may be open to changing the structure of the class. Believing that her current abilities and the class structure are both flexible to change, May resolves to negotiate the multiple possibilities with her teacher to find a good compromise.

These four different responses represent four general orientations that people can possibly assume across multiple life domains. People can adopt an emphasis on the fit between them and their context (like Tom), an emphasis on personal development within the immutable context (like Sue), an emphasis on how they can shape the context to suit themselves (like Patrick), and an emphasis on finding a flexible arrangement that recognizes the malleability of both self and context (like May). Although the scenarios above describe how people react to adversity, the orientations they illustrate are by no means restricted to these types of contexts, as I will discuss later.

Most important, these scenarios emphasize that how people react to their social worlds is often a function of an *interaction* between their beliefs about how much *they* can change and their beliefs about how much their *external situation* can be changed. I first review the literature on these beliefs about whether people can change themselves and their situations. Following which, I introduce a new framework—the Self by Situation Change (SSC) model—that describes how they predict the aforementioned behavioral orientations.

Lay Theories of Stability and Change

There is general consensus that people have beliefs about how stable or unstable various attributes are, including personality traits, abilities, attitudes, and even physical sensations. These beliefs inform their judgments and reactions (Ross, 1989). In his seminal review, Michael Ross (1989) defined these beliefs, or lay theories of change, as “schemalike knowledge structures that include specific beliefs regarding the inherent stability of an attribute, as well as a set of general principles concerning the conditions likely to promote personal change or stability” (p. 342). Today, they are used interchangeably with the terms “implicit theories,” “naïve theories,” and “mindsets.” These fundamental beliefs about stability play a central role in satisfying people’s innate need for control and predictability by considering what they can and cannot change (Furnham, 1988). People use these fundamental assumptions, often shaped by their socio-cultural backgrounds, to offer explanations for events, and thereby impose structure on an otherwise unpredictable reality (Furnham, 1988).

To date, the literature on lay theories of change has primarily focused on research on the malleability of people’s attributes (“self theories”), whereas much less literature has examined how malleable we perceive our external circumstances to be (“situation theories”). Nonetheless, both offer complementary perspectives that can significantly enrich our theorizing about how people behave in context. I review in brief the existing literature on self theories, highlight the dearth of literature on situation theories, and propose a framework that focuses on their interaction to predict how people react to their social worlds.

Self Theories

Theorizing and empirical research on lay theories have, to date, been dominated by self theories, which are concerned with how stable or changeable people believe their characteristics

are. As we observed in our introductory examples of Tom and Sue, fixed and malleable theories of intelligence incline people towards validating their innate ability or towards cultivating it within what is generally perceived to be a fixed context, respectively. In Tom's case, academic failures suggest a lack of natural ability in that subject because he believes that intelligence is stable and innate. In Sue's case, the same failures are considered indicative of a lack of effort or current (but not permanent) ability because she sees intelligence as malleable. Thus, people with Sue's belief system tend to put in more effort to cultivate their abilities in reaction to academic setbacks than people who share Tom's belief system.

To date, the most comprehensively researched domain of lay theories is probably that of intelligence. Carol Dweck and her colleagues (1988, 1995) proposed the distinction between an entity theory of intelligence, which involves believing that intelligence is inborn and stable, and an incremental theory of intelligence, which involves believing that intelligence can be developed through effort. Research has repeatedly shown that these two lay theories yield important differences in outcomes: incremental theorists, relative to entity theorists, tend to show more adaptive responses in the face of setbacks and even attain higher levels of academic achievement in the long run (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999; Mueller & Dweck, 1997).

In a study on first year college students in Hong Kong, Hong and colleagues (1999, Study 2) found that students with low college entrance English proficiency scores were more likely to take an English proficiency remedial course if they held an incremental theory of intelligence rather than an entity theory of intelligence. The researchers replicated these results in a laboratory study, in which they manipulated college students' lay theories of intelligence through scientifically written articles (Hong et al., 1999, Study 3). Again, they found that students who

received low performance feedback on a nonverbal ability test were more likely to choose a tutorial to improve themselves after reading the incremental theory article (73.3%) as compared to the entity theory article (13.3%). No differences emerged among those who performed well in both studies. Other researchers also found these effects in longitudinal field studies on American seventh-grade students who were going through the critical junior high school transition (Blackwell et al., 2007). Students randomly assigned to receive an eight-week incremental theory of intelligence workshop (intervention group) at the beginning of their seventh grade were less susceptible to a decline in grades commonly associated with the junior high school transition, compared to those assigned to a control group.

To date, multiple laboratory and field studies have replicated these findings, showing that incremental theorists tend to show greater persistence and more adaptive responses in the face of academic setbacks, compared to entity theorists (e.g., Aronson, Fried, & Good, 2001; Kamins & Dweck, 1999; Mueller & Dweck, 1998; O'Rourke, Haimovitz, Ballwebber, Dweck, & Popovic, 2014). These motivational differences are driven by a greater learning orientation (which emphasizes the gradual mastery of relevant competencies) among incremental theorists, in contrast to the performance orientation (which focuses on achievement) that entity theorists tend to hold (Dweck & Leggett, 1988). Their learning and performance goals powerfully influence the attributions and responses that students have towards their academic setbacks. Over time, motivational differences among entity and incremental theorists tend to accumulate into disparities in academic achievement, especially over crucial school transition years that are often fraught with increasing difficulty (Blackwell et al., 2007; Yeager et al., 2014). A recent meta-analysis shows that there is an overall positive albeit small relation between an incremental theory of intelligence and academic achievement ($r = .095$, $r_c = .141$; Burnette et al., 2013).

Self theories about many other attributes, including but not limited to social skills, emotions, weight management, negotiation skills, and leadership ability, orient people in an analogous manner (e.g., Beer, 2002; Burnette, 2010; Burnette & Finkel, 2012; Hoyt, Burnette, & Innella, 2010; Kray & Haselhuhn, 2007; Tamir, John, Srivastava, & Gross, 2007): the more people view an aspect of themselves as changeable, the more likely they are to focus on developing that part of themselves (rather than validating its innate levels). For example, in her study of shy entity and incremental theorists, Beer (2002) found that shy incremental theorists adopted fewer avoidant strategies than shy entity theorists in their social interactions with strangers even though both felt equally uncomfortable with the interactions. Moreover, they felt less shy and nervous in their subsequent social interactions than shy entity theorists, and independent observers rated them as appearing more sociable too (Beer, 2002, Study 3). Thus, although shy people tend to feel uncomfortable with social interactions with a stranger, whether they conceive their shyness as malleable or not determines how hard they try to overcome their shyness in social interactions.

Beyond domain-specific lay theories, people also have lay theories about their own personalities more generally (Dweck, 2000)⁸. Entity personality theorists believe that they cannot change their basic nature, and tend to endorse statements like: “Your personality is something about you that you can’t change very much.” In contrast, incremental theorists tend to disagree with these statements, believing that their personality can change over time. When presented

⁸ Note that although semantically similar to “implicit personality theory,” person theories refer to the *mutability* of various characteristics rather than how associated traits are with one another, which the former emphasizes (e.g. Schneider, 1973).

with challenging social situations, fourth to sixth graders who endorsed an incremental theory had fewer intentions to use low-risk strategies (for instance, only inviting people who would say yes to attending their party) to navigate their social interactions, relative to those who held an entity theory (Erdley, Cain, Loomis, Dumas-Hines, & Dweck, 1997). Furthermore, incremental theorists were less concerned about how socially skilled they appeared to be in front of others compared to entity theorists.

To date, self theories have been studied very thoroughly. The general pattern of findings is that the more changeable people believe an attribute to be, the more they focus on developing it when it is deemed lacking. Nevertheless, these self theories have generally been looked at independent of the beliefs that people may concurrently hold about their situations, which I discuss next.

Situation Theories

Relative to the plethora of research on self theories, comparatively less research has examined what lay theories people have about their *external situations*. In reviewing the literature, I adopt an extensive definition of people's lay theories about how changeable any situational aspects external to themselves are. Thus, the broad label "situation theories" refers to beliefs about the changeability of salient and relevant aspects of the situation that are external to the self. Depending on the context, this could be another person in a relationship, such as a romantic partner, mentor, or group members; it could also be features of one's circumstances, like social systems, job responsibilities, living conditions, and financial circumstances, or take the form of the external physical world, such as the organization of one's work environment. Using more concrete examples, in the context of a romantic relationship, one's partner constitutes the salient and relevant situational aspect; on the job, the salient situation could be the

tasks involved in the individual's specific role; within the home, it could be the physical arrangement of the furniture. Thus, by this broad definition, people's situation theories refer to beliefs about the changeability of what is deemed salient and relevant in the external context, which can be specific aspects of one's social or physical environment.

Why do we need to consider situation theories if we already know what self theories affect? To appreciate the implications of situation theories, compare our introductory examples Tom and Sue with Patrick and May. Tom and Sue assume that their grades are absolute and irreversible, whereas Patrick and May believe that they can be changed. Tom and Sue represent people who believe that their situations (in this case, the way their teachers have structured their classes) are fixed and that they cannot do anything about them. Patrick and May believe the opposite—that they can change their teachers' minds about the class structure, or in other words, that their situations are changeable. As in these illustrative examples, we observe that different situation theories can breed dissimilar reactions to the same event. Tom and Sue, who have fixed situation theories, choose among the options they have to respond to a fixed and restrictive context (which generally amount to quitting or persisting); whereas Patrick and May, who have malleable situation theories, attempt to alter their circumstances by persuading the teacher to modify their class requirements, albeit with different motives (change the teacher's mind versus negotiate flexibly). These examples illustrate that situation theories can influence how likely people are to *change* aspects of their situations rather than merely adapting themselves to fixed situations. This argument is consistent with what was first suggested by Dweck and Leggett (1988), who proposed that people's lay theories about external attributes, including of other people and the world, can lead to “low initiation of and persistence towards change” under an entity theory or to “mastery-oriented goal pursuit” under an incremental theory.

Lay Theories about Other People's Personalities

Perhaps the most studied aspect of the external social context within the lay theories literature has been other people's personalities. Prior research has implicated people's lay theories about others' personalities in people's social judgments and reactions to others' behaviors. For example, these lay theories powerfully influence how people react to ambiguous and perceived acts of aggression. Yeager and colleagues (2011) found that, in the context of peer victimization and exclusion, an incremental person theory was associated with lower attributions of hostile intent to the aggressor, lower feelings of shame and self-blame in the victims, and fewer intentions to take revenge on their aggressors. They replicated these main effects in a longitudinal field study where high school students were randomly assigned to one of three groups: control (no treatment) group, socio-emotional coping skills group, or an incremental theory group. After a 6-week-long workshop, students who had been taught about an incremental theory of personality were significantly more prosocial and less likely to show aggressive retaliation after a social exclusion experience (they allocated 40% less hot sauce to their aggressors), relative to those in the other two groups. Additionally, these students in the incremental theory group were more likely to have been nominated by their teachers for having reduced their conduct problems three months after the intervention (Yeager, Trzesniewski, & Dweck, 2013).

Lay theories about others' personalities also carry significant implications for people's judgments of individuals and groups. Chiu, Hong, & Dweck (1997) found that people who held an incremental theory were less likely to exhibit lay dispositionism than those who held an entity theory. Relative to entity theorists, participants who were induced to believe in an incremental theory were less likely to make trait judgments and were less confident about using current

information about a person to predict that person's behaviors in the future (Chiu et al., 1997, Study 5). Furthermore, incremental theorists had a lower tendency to endorse group (racial and occupational) stereotypes than entity theorists (Levy, Stroessner, & Dweck, 1998).

Situation Theories about Other Contextual Factors

To date, almost all the work on what I define as situation theories has focused on other people's dispositions. Comparatively, little empirical research has tested how people construe other important aspects of their social contexts, such as their circumstances, physical environments, and the world in general. Nonetheless, these situation theories also carry important and unique implications of their own. First, Dweck, Chiu, and Hong (1995) showed that people's general theories about the world were independent of their lay theories about other people's personalities and their personal attributes. Second, Chen and colleagues (in prep) found that situation theory effects do not overlap with those of self theories. To highlight the importance of these situation theories, I summarize the findings of each individual paper that examines their effects on judgment, intentions, and action, of which there are only a few to date⁹.

Lay Theories about Situations. People's lay theories about how changeable their situations in general are predict how likely they are to *take action* on unfavorable circumstances. Chen, Laurin, McBairty, and Lin (in prep) found that when people believe that situations are generally malleable, they are more likely to try to change them rather than passively adapt to them. In a field experiment, college students' situation theories were first manipulated using biased questionnaires before they were presented with a hypothetical college policy that the

⁹ Note that in this paper, I specifically focus on lay theories about stability and changeability of external situations. This is distinct from other literature on different types of lay theories, such as cultural theories (e.g. Markus & Kitayama, 1991, 1998), attribution theories (Weiner, 1972, 1985), or cognitive biases like the fundamental attribution error (e.g. Ross, 1977; Ross, Greene, & House, 1977).

university intended to implement. A higher proportion of the students who were induced to believe that situations can be changed signed the protest petition (73.9%), relative to those induced to believe that situations cannot be changed (58.1%). In a second study, survey panel workers who believed that situations are generally changeable were almost twice more likely (44.8%) to join a collective action campaign aimed at increasing their low wages, compared to those who believed that situations are fixed (24.0%). In sum, people's lay theories about the malleability of situations can influence how likely they are to change disadvantageous situations rather than adapt to them.

World and Morality Theories. Chiu and Hong (1999) examined the implications that Hong Kong citizens' lay theories had on their attitudes towards the 1997 handover of Hong Kong to China. They found that Hong Kong citizens who viewed the world as fixed showed greater intentions to assimilate to mainland Chinese culture, but Hong Kong citizens who viewed the world as malleable showed more divergent attitudes. Relative to the former, those who believed in a changeable world reported that Hong Kong children should learn the mainland Chinese language at an older age (Study 2) and were more punitive towards a hypothetical mainland Chinese person relative to a Hong Kong person who committed the same infraction (Study 1).

Chiu, Dweck, Tong, & Fu (1997) established a similar pattern of results in the domain of morality. They found that participants who believe in a fixed socio-moral reality (simultaneously believing that the world and people's moral values are fixed) tend to subscribe to a duty-based morality. These people generally prioritize the expectations and roles that each person is expected to fulfill in society. On the other hand, those who believe in a changeable socio-moral reality (simultaneously believing that the world and people's moral values are changeable) tend

to subscribe to a rights-based morality. These people tend to prioritize the higher-order principles and human rights that societal regulations should adhere to.

Organizational Theories. Situation theories also have implications for how people present themselves to organizations they want to be a part of. Murphy and colleagues (2009, 2015) found that the dominant lay theory that an organization portrays can influence applicants' self-presentational styles, stereotype threat concerns, and even intentions to apply for a job at the organization. Murphy and Dweck (2009) randomly assigned students to either read about an organization that espoused a fixed theory of intelligence or one that espoused a malleable theory of intelligence by manipulating the organization's description and meeting minutes that students were given to read about the organization. Students who were exposed to the fixed theory manipulation were more likely to select intelligence-related qualities of theirs to describe in their applications, whereas those who were exposed to the malleable theory manipulation were more likely to select motivation-related qualities such as their enthusiasm for learning. Other research extends these findings to show that the lay theories apparent in companies' mission statements can affect how much stereotype threat they pose to female applicants, how much women trust the companies, and how likely they are to apply for the jobs offered by the companies (Emerson & Murphy, 2015).

Summary

As described above, these represent the handful of empirical papers that have specifically examined the implications of situation theories other than people's personalities. Compared to the plethora of research on self theories and personality theories, empirical work on these situation theories has accumulated at a comparatively slow rate despite their consequential implications. Importantly, understanding the different types of situation theories, how they are

associated with different goals and what consequences they have for behavior pose rich avenues that future empirical research should explicate.

Motivating Complementary Types of Changes

At a big-picture level, self theories motivate the degree to which people effortfully change their own attributes, be it their intelligence, emotions, or personality (Dweck, 2000). Situation theories, on the other hand, motivate how likely people are to judge others, react attitudinally against unsatisfactory circumstances, and enact changes on their environments (Chen et al., in prep; Chiu & Hong, 1997; Yeager et al., 2011). To date, the literature has generally studied the effects of self and situation theories separately. Nonetheless, these lay theories can serve complementary functions in motivating change—self theories motivate how likely people are to change aspects of themselves (“*self change*”) whereas situation theories motivate how likely people are to change their external environments (“*situation change*”).

Self Theories Motivate Self Change within Fixed Situations

The dominant existing self theory framework proposed by Dweck and Leggett (1988, Figure 5.1) accounts well for the motivational consequences of people’s beliefs about their attributes. The model proposes that an entity theory focuses people on showcasing their existing levels of the relevant attribute to gain positive judgments. An incremental theory, in contrast, focuses people on developing their attributes, such that they seek challenge and show persistence in the face of temporary setback.

Let us, however, consider the contexts in which self theories have mainly been studied. Recent findings suggest that the conventional difference between entity and incremental theorists’ responses to difficulty may be contingent upon contexts that are assumed to be fixed and restrictive (Chapter 2; Chen, Schwarz, & Ellsworth, under review). As we saw with Tom and

Sue, the effects of self theories are especially pronounced in contexts such as school classes, which students generally do not consider within their power to change. Construing the situation as immutable focuses the actor on two plausible ways of responding: changing the self to suit the situation or disengaging with the situation. Thus, beliefs that incline one towards personal development would facilitate the former, and beliefs that incline one towards self-validation rather than improvement would make the latter more likely.

Situation Theories Motivate Situation-Directed Change

To juxtapose, situation theories predict how likely people are to change their situations rather than merely adapt themselves to them. We observe this by contrasting Patrick and May's reactions against Tom and Sue's reactions to their poor exam grades—Patrick and May see approaching their teacher as a plausible response because they believe that there is the possibility of changing her mind; Tom and Sue accept their grades as absolute and adjust themselves accordingly.

Empirical research shows that people are more likely to take action to change problematic situations the more they believe that circumstances are changeable rather than fixed (Chapter 3; Chen et al., in prep). Importantly, these studies ruled out the effect of self theories on these outcomes. For example, participants' likelihood of proactively voicing their dissatisfaction to their supervisor in a work conflict (rather than passively adapting to the situation) was influenced by how much they perceived their supervisor to be open to change, but not by how much they themselves were resistant to change (Chen et al., in prep; Study 1).

Complementary Motivating Forces

Considering the findings altogether, the evidence suggests that self theories and situation theories offer different, complementary predictions for behavior. Self theories are implicated in

how well people develop personal attributes within seemingly fixed and restrictive circumstances, whereas situation theories influence how likely people are to change their circumstances—an outcome that self theories do not account for. In a nutshell, malleable self theories direct change inwards at one’s personal attributes (“*self change*”) when the situation is immutable, whereas malleable situation theories direct change outwards at one’s situation (“*situation change*”). Thus, these two kinds of lay theories offer complementary predictions for human motivation.

Next, I illustrate how understanding their *interaction*, above and beyond these separate motivational patterns, is important and discuss a new framework that extends previous theorizing to include the possible ways that they may interact with one another.

Self Theories and Situation Theories Interact to Predict Behavior in Context

To date, the self theory and situation theory literatures have mostly examined these beliefs independently of the other. As aforementioned, self theories primarily motivate self-directed changes within situations that seem restrictive and fixed, whereas situation theories primarily motivate situation-directed changes. Still, it is important to consider the simultaneous *interactions* of these beliefs. The dynamicism that emerges from simultaneously understanding how changeable the self is in relation to the external environment could significantly add to our predictions of human behavior. This self-by-situation interactionist perspective is not new, given that psychology has long recognized the importance of understanding their interplay (Kelly, 1991; Lewin, 1943; Ross & Nisbett, 2011). I discuss how this insight can be applied to inform the study of lay theories, which has generally considered them separately, and to highlight the generative predictions that we could make from understanding their interaction.

Given that much less research has looked at situation theories relative to self theories, it is not surprising that their interaction has yet to be well-examined. Examined independently, self theories do not sufficiently account for reactions like proactive behavior aimed at changing the situation; situation theories do not distinguish between staying with the status quo and actively adjusting oneself to it. Nor can each approach alone differentiate between cases like Sue and Patrick, who have opposite beliefs about personal and situational malleability—Sue’s reactions characterize people who believe that their attribute is malleable but the situation is fixed; Patrick’s reactions characterize people who believe that they can change the situation but they cannot change themselves.

Thus far, the dominant lay theories framework by Dweck and Leggett (1988) has effectively explained differences between people who believe that certain attributes are fixed or malleable, especially within a stable context. Nevertheless, it does not fully account for the various types of reactions that may emerge from different *combinations* of self and situation theories, such as proactive behavior aimed at changing the situation. To increase the explanatory power of the past framework, I propose an extended “Self by Situation Change” (SSC) Model (Figure 5.2) that integrates self and situation lay theories of change. I discuss how this framework builds on previous classic findings and highlight testable empirical predictions that emerge from this framework.

Self by Situation Change (SSC) Model

The Self by Situation Change (SSC) model extends Dweck and Leggett’s (1988) theoretical framework to account for more variation in people’s motivational patterns. It attempts to show how different combinations of self theories and situation theories motivate various types of response orientations.

As portrayed in the opening examples, beliefs about changeability can lead to multiple different reactions to the same event, or “response orientations”: Tom represents people who believe that their personal attributes and their situation are relatively immutable; Sue represents those who consider their personal attributes as more malleable but their situations as more fixed; Patrick represents those who construe their personal attributes as more stable but see their situations as more changeable; May represents those who consider both their personal attributes and their situations as flexible. These examples exemplify different combinations of self and situation theories that motivate orientations focused on finding one’s fit, developing oneself, shaping the situation, and navigating multiple options, respectively (see Figure 2). For simplicity, I discuss these self and situation theories as dichotomous, although these beliefs exist to various degrees along continua in real life. In this section, I describe each of these combinations of self and situation theories and the orientations they are associated with. Although I will frame self and situation malleability in general terms for illustrative parsimony, predictions made by the SSC framework involve construals about the *salient* and *relevant* aspects of the self and situation in context.

Find My Fit: Fixed Self, Fixed Situation

When characteristics of the self and situation are both believed to be pretty stable, people focus on the *fit* between the self and the situation. This mentality orients people to attend to features of the Person-Situation relationship that connote compatibility or a lack thereof. Thus, the “find my fit” orientation is characterized by two important responses: first, self-selection into situations that are compatible with the individual’s fixed attributes (in ways that validate the latter), and second, construing experiences of difficulty and failure as indicative of incompatibility with the situation. Take Tom for instance, who believes that his intelligence and

his grades are both unchangeable. With this combination of beliefs, he focuses on judging whether there is a good fit (or not) between his abilities and the class that he is in. Thus, failure and difficulty are interpreted as signs that he should disengage from what he considers a poor fit. People with this orientation believe that if a good match is found, positive outcomes will ensue; if a good match is not found, outcomes will be suboptimal—in which case a better match should be sought. If leaving the situation is not an option, however, helplessness may result.

We observe evidence of this find-my-fit orientation in various domains. Importantly, this response orientation is consistent with theorizing about entity theorists within fixed situations, who are described as generally more concerned with proving their existing, supposedly stable levels of an attribute. Driven primarily by the goal to do well, entity theorists gravitate towards arenas that afford favorable judgments of their abilities over others (Dweck, 2000, p. 24). When faced with setback, however, they tend to be similar to depressed, helpless people “in their desire to simply quit or escape from the arena in which failure took place” (Dweck, 2000, p. 46). Therefore, when we consider that students generally see their academic contexts as fixed and set, the behaviors exhibited by an entity intelligence theorist as proposed in Dweck and Leggett’s (1988) framework are consistent with what the find-my-fit orientation might predict.

Although one might readily assume that this find-my-fit orientation is no different from an entity theory, there is a main distinction to take note of. The entity theory is concerned with the belief that a personal attribute or ability is fixed (or many attributes for that matter are fixed), whereas the find-my-fit orientation emerges from the *combination* of the belief in a stable personal attribute and simultaneous belief that the salient situational factor is also fixed. Thus, an entity theory focuses on assessing one’s existing attribute or ability within a given situation, but

the find-my-fit orientation emphasizes achieving *compatibility* between personal and situational attributes.

In the domain of work, some people tend to self-select into lines of work that correspond to their personal interests (Chapter 4; Chen, Ellsworth, & Schwarz, in press). These people, termed “fit theorists,” believe that what they consider enjoyable at the outset will generally remain more enjoyable than alternatives over time—indicative of a stable conception of their own interests. Additionally, their perceptions of fit with their lines of work do not change substantially over time, suggesting a similarly stable conception of their work circumstances. For fit theorists, these perceptions of vocational fit strongly predict how much passion they feel towards their work. When they perceive a poor fit with their lines of work, however, they report lower levels of vocational passion and satisfaction.

The self-fixed and situation-fixed pattern of beliefs is also implicit in people’s views of their close relationships. In the context of close relationships, the salient situation often refers to one’s partner. Knee and colleagues’ (2001, p. 809) define a destiny belief as the belief that “potential relationship partners are either meant for each other or they are not.” Survey items include: “Potential relationship partners are either compatible or they are not,” “To last, a relationship must seem right from the start,” and “Potential relationship partners are either destined to get along or they are not” (Knee, Patrick, & Lonsbary, 2003). These questions suggest that implicit in this destiny belief are the assumptions that both partners have fixed attributes and they cannot change over time. Consequently, the relationship as a whole is viewed as static and “diagnosable with little opportunity for improvement” (Knee, Patrick, et al., 2003, p. 46). Thus, compatibility from the outset is prioritized and relationship conflicts are construed as signs of a mismatch between the partners.

Across these domains, people who concurrently believe that their attributes and their salient situational factors are fixed tend to adopt a find-my-fit orientation. At its core, the orientation focuses people on achieving a good match between their personal and situational characteristics. Thus, those with a find-my-fit orientation are attentive towards cues that indicate compatibility or incompatibility, and tend to self-select into situations that validate their fixed attributes (such as their abilities, attitudes, interests, and values). When faced with negative experiences, people with this orientation tend to attribute their setbacks to incompatibility with their current situation, making them more likely to withdraw from these situations when success does not come smoothly, or to feel helpless if they are unable to leave the situation.

Develop Myself: Malleable Self, Fixed Situation

At its core, the “develop myself” orientation emerges when people believe that their personal attribute can be cultivated within what they assume to be a fixed situation. When people see their attributes as changeable but their situation as fixed, they tend to focus on how they can develop their attribute to match the situational demands. Take Sue for example, who views her exam grades as fixed but believes that she can cultivate her Mathematics abilities. This inclines her to focus on personal development, especially when outcomes turn out short of her expectations. This orientation is characterized by a focus on opportunities for personal improvement to suit the demands of the situation, either by construing events as such opportunities or by recognizing personal attributes that need to be worked on. Like Sue, people with this orientation generally construe experiences of challenge and setback as opportunities for personal growth. We expect a focus on personal growth within this develop-myself orientation to manifest most under conditions that signal a need for change. Thus, their implications are

sometimes obscured during positive experiences, which do not indicate that a change in the self or the situation needs to be made.

Research on an incremental theory of intelligence, which has generally been studied in academic contexts that students perceive as unchangeable, exemplifies this orientation. Driven by mastery goals, incremental theorists tend to attribute failure to a lack of personal effort. Yet, because they recognize that ability can grow, doing poorly now suggests that there is room for improvement and better future performance. Thus, they often respond to difficulty and setback with perseverance and resilience (e.g. Hong et al., 1999; Mueller & Dweck, 1997). Because of these adaptive psychological and behavioral reactions to setback, incremental theorists tend to reap short-term and long-term academic achievements often superior to those of entity theorists, who tend to be less persistent and resilient in the face of setback (Blackwell et al., 2007; Dweck, 2000).

Beyond the academic context, working adults can similarly hold beliefs about their attributes as malleable but their work characteristics as set and unchangeable. Those with a “develop theory” believe that passion for their work can grow over time as they gain competence in their line of work (Chapter 4; Chen et al., in press). Rather than expect their work roles or vocational demands to change, these people endorse developing competence on the job to better fulfill what is expected of them. Moreover, they also tend to have a malleable conception of their feelings of passion, forecasting that it will increase over time within the same line of work. Consistent with this, research on a representative sample of American working adults showed that “develop theorists” tend to report significant increases in their perceived fit with their vocations over time, which is positively related to their self-reported passion at work (Study 4).

An important context in which many people tend to hold this self-malleable, situation-

fixed pattern of beliefs is weight management. In America and many other developed countries, healthy and unhealthy foods alike are often extremely accessible—in quantities that are appropriate to a daily caloric intake and in quantities far beyond this acceptable range. In the popular media, we often see quotes that illustrate the prevalent assumption that people cannot do anything to change their consumption environment. Take for instance how the obesity epidemic in America is portrayed in our media. In a summary of the book *Food Politics: How the Food Industry Influences Nutrition and Health*, R. Morgan Griffin writes that:

recommendations about healthy eating are overwhelmed by hundreds of billions of dollars worth of advertising for junk foods that we're subjected to at home and even in public schools. And as fast food companies and chains compete with one another by increasing portion sizes, our waists are increasing proportionately (quote from WebMD, April 5, 2015).

Similarly, NPR (May 14, 2012) reported that “sedentary lifestyles and changes in eating habits have contributed to weight gain, as more Americans work at desk jobs, use electronic devices and get served increasingly larger portions at restaurants.”

As these quotes illustrate, many people tend to assume that people are the passive victims of their consumption environments. In other words, weight management is about the difficult exercise of willpower *in a consumption environment dictated by the food companies and unchangeable by the consumer*. This assumption is reflected in much of the research on weight management, which generally study dieting and exercise—two willpower-oriented strategies—as the main means through which weight is managed (e.g., McFerran & Mukhopadhyay, 2013; Miller, Koceja, & Hamilton, 1997; Ross et al., 2000).

In these seemingly fixed consumption environments, Burnette and her colleagues (2010, 2012) have shown that people who believe that body weight is changeable rather than stable tend to be more successful self-regulators after dieting setbacks. In response to a hypothetical dieting setback, those who had been primed with a malleable lay theory of body weight were reported a greater likelihood of engaging in adaptive self-regulatory efforts than those with a fixed theory of body weight (Burnette, 2010). In a longitudinal study, people who had taken a malleable body weight theory intervention were buffered against severe weight management setbacks, compared to control condition participants whose setbacks led to weight gain. Those with the malleable theory also successfully lost more weight over a 12-week period compared to control participants (Burnette & Finkel, 2012).

Taken together, we observe evidence of a develop-myself orientation across many domains in which people see their attributes as more malleable and their situations as more fixed. Central to this orientation is a prioritization of personal development in the area where there is room for improvement. This is consistent with Carol Dweck and colleagues' (1988, 2000) argument that incremental theorists are primarily motivated by learning (as opposed to performance goals). Consequently, this orientation inclines people to appraise events in terms of what they can learn from them. They therefore tend to respond to events, especially negative outcomes or challenging experiences, with developmentally-focused persistence.

Shape the Situation: Fixed Self, Malleable Situation

A shape-the-situation orientation involves believing that the situation can be changed to suit oneself. Central to it is the combination of beliefs that the relevant personal attribute (for instance, one's position in an argument) is fixed and the commensurate situational factor (such as the other person's position) is malleable. This combination of beliefs motivates the intention to

change the situational factor—and under the appropriate conditions, actual behavior directed at changing the situation (see Ajzen, 1985, for when intentions lead to action). People with this orientation construe situational cues that suggest contextual malleability as opportunities to be acted on.

For example, many of us are familiar with the experience of arguing with someone more stubborn than ourselves (unless of course we tend to be the most stubborn of all). Often in these interactions, the person who more stubbornly holds his or her point of view keeps trying to change the mind of the other, while being adamantly resistant to any form of reciprocal persuasion. This more stubborn person behaves like one who has a shape-the-situation orientation. Although I use a negative example of a stubborn person here, note that having a shape-the-situation orientation is not necessarily bad. In fact, proactive situation-change behaviors associated with this orientation can involve challenging a disadvantageous status quo and generating new ways to revolutionize previously inefficient methods. These actions can promote job performance and garner leadership responsibility for the individual, and even have the potential to improve social circumstances for many (Crant, 2000; Grant & Ashford, 2008).

Although it has been less studied from a lay theories approach, we observe manifestations of this shape-the-situation orientation in everyday life—from students who contest their grades and employees who speak up against unethical organizational practices to large social movements like the civil rights protests. In the opening example, Patrick represents students who, upon seeing a poor grade, react by taking action to change the system. Rather than considering the situation a fixed reality that they must cope with, or even construing their grades as an indication of low ability, these students focus on changing the situational factor instead. Representations of this orientation have yet to emerge in the lay theory of intelligence literature,

which has been dominated by the comparison between entity and incremental self theories. In the academic domain, the equivalent of this shape-the-situation orientation would be what we observe in Patrick's case—students who react by changing their circumstances.

At work, employees exhibit behavior that involves changing others, their role responsibilities, their organizational norms and many other aspects of their work contexts to suit personal wants and needs. For example, they voice issues with which they are dissatisfied (LePine & Van Dyne, 2001; Van Dyne & LePine, 1998), sell issues of personal relevance to their supervisors (Detert & Burris, 2007; Dutton & Ashford, 1993), change the tasks and responsibilities involved in their roles (Nicholson, 1984; Parker, Wall, & Jackson, 1997; Wrzesniewski & Dutton, 2001), and take charge in driving organizational changes that they want to see (Morrison & Phelps, 1999). The circumstances that promote these situation-change behaviors involve factors that arguably contribute to seeing the self as more fixed and the situation as more malleable.

For example, the organizational behavior (OB) literature shows that workers are more likely to engage in behaviors aimed at changing the organizational context when the organizational leadership is open and supportive of change, management is willing to listen to employees, there are ongoing change initiatives in the organization, and there is ambiguity in the organizational context (Detert & Burris, 2007; Dutton & Ashford, 1993; Rank, Nelson, Allen, & Xu, 2009; Morrison & Phelps, 1999; Grant & Ashford, 2008; Dutton, Ashford, O'neill, Hayes, & Wierba, 1997)—situational factors suggestive of a more changeable context. At the same time, the likelihood of proactive behaviors is also affected by workers' dispositional need for control, desire for personal consistency, accountability to a particular group of stakeholders (which necessitates behavioral and attitudinal consistency), and their perceived influence in the

organization (including a position of importance and access to powerful networks; Black & Ashford, 1995; Dutton & Ashford, 1993; Grant & Ashford, 2008; Lind & Tyler, 1988). These constitute personal factors suggestive of stability in personal attributes or fixedness in one's position that the individual can afford (or has to prioritize). Although there is little empirical evidence testing the *simultaneous interaction* of these personal factors of fixedness and situational malleability, existing evidence suggests that situation-directed proactivity can be maximally facilitated when people construe the situation as malleable and the self as fixed on relevant characteristics.

In the context of weight management, we observe a shape-the-situation orientation emerge when people recognize (somewhat counter-intuitively) that their willpower is difficult to change but their consumption situations can. Proponents of this view argue that “it’s easier to change your eating environment than to change your mind” (Wansink, 2014, p. 6). In contrast to the develop-myself orientation, Wansink (2014) proposes that people should take the initiative to change their kitchen contents and proactively ask businesses to structure their systems so as to facilitate consumers’ healthy eating goals. For example, he recommends that people should make unhealthy foods inconvenient and less accessible in their kitchens, minimize leisurely material around the kitchen to decrease non-cooking time spent there, and use smaller serving dishes to decrease portion sizes. Rather than passively going along with what is on the menu, he also suggests that people should consider asking their servers at restaurants to bag a portion of their meal beforehand or request for a half portion to order before they eat. In these and many more of Wansink’s (2014) recommendations, we can infer a pattern of beliefs that reflect a shape-the-situation orientation—beliefs that the external environment (specifically the *physical* environment in many of these instances) is more changeable than one’s own dietary habits.

To summarize, a shape-the-situation orientation emerges from construing the relevant characteristic of the situation as more malleable and the one's personal attribute as more fixed. Central to this orientation is a focus on changing the external situation to suit oneself. People with this orientation tend to look out for opportunities to change the situation to suit their preferences and needs, and take action to change suboptimal circumstances. Whether these actions and intentions lead to successful change or not is another issue that depends on various other factors that moderate the outcomes (which I discuss later).

Navigating Multiple Possibilities: Malleable Self, Malleable Situation

An interesting combination occurs when people believe that they themselves and their situations are both malleable. Like the example of May, this produces a state in which the self is flexible within a changeable situation. Recognizing the simultaneous changeability of both puts one in a state in which multiple options are possible, ranging from mutual compromise to one side completely accommodates the other's demands. This mentality allows the individual to consider what he or she wants out of the specific situation. It orients people towards being more strategic in recognizing possibilities within the context and navigating them to achieve mutual compromise.

One possibility is that people with this orientation strategically navigate the flexibility in themselves and situations to effectively attain their goals. This assumes that they are aware of the multiple possibilities that can emerge within the context. For example, May herself is willing to accept her poor grades and develop her own knowledge, but at the same time, she also believes that her teacher is willing to be persuaded to improve the class. Thus, May might try to understand what she herself needs to learn and also try to justify her reasons to change her teacher's mind. Under these circumstances, both, either, or neither could change.

An obvious upside of this orientation is that one perceives a greater number of possibilities within the context, which expands one's response repertoire. Additionally, it motivates people towards achieving mutual compromise. We observe this orientation manifest in the mutually beneficial co-development of partners in close relationships. In the close relationship literature, Knee's (1998) growth belief of relationships best illustrates this self-and-situation-malleable pattern of beliefs. The growth theory proposes that "successful relationships are constructed and developed by conquering obstacles and growing closer" (p. 361). This involves endorsing statements such as: "A successful relationship is mostly as matter of learning to resolve conflicts with a partner," "Relationships often fail because people do not try hard enough," and "With enough effort, almost any relationship can work" (Knee et al., 2003). Although framed at the level of the "relationship" as a unit, implicit in these statements is the assumption that each relationship partner (i.e. the self and the situational other) can change over time. Therefore, relationship obstacles and conflict can be overcome with mutual willingness and effort. Note that this orientation differs from the develop-myself orientation because it involves believing that *both* the self and the salient other can change, rather than believing that only the self is more malleable and the other is much less so (as in the develop-myself orientation).

On the other hand, a potential downside to seeing multiple possibilities is decision-making paralysis (Iyengar & Lepper, 2000; Schwartz & Klivan, 2004). Presented with so many plausible strategies and outcomes, one might find it difficult to commit to a single path of action. Another disadvantage can be seen in decision-making inefficiency when there are overly accommodating parties on both sides, neither of whom want to assert their preferences on the other. We observe this among friends who are highly accommodating towards one another, on

food preferences for instance, to the point that a mutual decision is significantly delayed and ironically difficult to reach.

It is also possible that this cell in the SSC model may only exist as a transient state. With further interaction and more information, the two entities at hand would settle into one of the other three SSC orientations that actually predict directed action and intention. This phenomenon is relatively common in negotiations, where both parties are flexible in reacting to the changing offers on the table. Negotiators who are strangers may enter the negotiation admitting that both sides' positions can change. Yet soon after the interaction begins, a hierarchy of stability forms as the two negotiators develop a better understanding of whose position is more malleable relative to the other's. Following this, one of the other three SSC orientations dominates, depending on the relative malleability judged. Take May for instance. In her case, she might enter the meeting with her teacher understanding that both sides' positions can change. During the meeting, her teacher might very well convince her that the class system cannot be changed to accommodate any specific student. As she learns more about her teacher's rationale, May's position might become more and more flexible to change, thereby shifting her to a develop-myself orientation. However, if during the meeting May realized that she could persuade her teacher to reconsider the current class grading system (i.e. her teacher's position is more malleable than her own), then she would have shifted to a more shape-the-situation orientation. Some theorists have said that when both possibilities of changing the self and situation are available, people start by trying to alter the situation and resort to self-change only after the former proves difficult or impossible (Lazarus, 1993; Rothbaum, Weisz, & Snyder, 1982). However, I do not think that situation-change and self-change have to occur in sequence that way all the time. If multiple options are available, then some people might just identify one strategy

that they prefer, some may be naturally inclined to trying to conform to what the situation demands first, yet others may consider the options in order of ranked preferences, and so on.

In summary, the core psychology that is a product of believing that both oneself and the situation are malleable produces an orientation that motivates the strategic recognition and navigation of multiple possibilities towards mutual compromise. Whether or not this cell in the SSC model exists as a stable state, or if it is merely transitory until more information is gathered, remains an open question. Consider these issues: Can person and situation entities in any context exist at exactly equal levels of malleability? If two people in an interaction are equally rigid in their positions or equally flexible, then what direction can they settle on to take action? Future research might fruitfully examine what happens when self and situation components are both construed as highly and similarly malleable to inform this component of the model.

Summary

In summary, existing literature has predominantly focused on people's lay theories about how malleable their attributes are and less so on their beliefs about situational aspects. Taken alone, neither self theories nor situation theories can explain the diversity and complexity of people's responses to situations—self theories do not sufficiently explain when people take action to alter their circumstances; situation theories do not distinguish between passive and active ways of adapting to the status quo. However, there has yet to be empirical research that examines how self and situation theories *interact* with one another in context to affect people's responses to their environments.

To build upon Dweck and Leggett's (1988) previous model, the SSC model integrates theorizing about self and situation theories into a unified framework. It furthermore illustrates different response orientations that their interactions are associated with. These four broad

orientations include: finding my fit, developing myself, shaping the situation, and navigating multiple possibilities. Each of these orientations directs people's focus on certain possibilities in context, their interpretation of events, and their behavioral reactions. As previously mentioned, the self and situation theories (and their combinations) have been presented here dichotomously for illustrative parsimony. However, they can exist in real life to varying degrees along continua. The SSC model therefore offers an integrated framework with which to interpret previous findings and suggests testable predictions that could fruitfully inform future empiricism.

Implications

One of the aims of the SSC framework is to offer a new perspective on familiar psychological phenomena. Understanding people's self and situation theories, along with the mindsets that emerge when these two types of beliefs interact, can help us fruitfully explain the types of strategies that people use to react to events. I discuss how this framework may be potentially useful in informing how we think about topics including self-regulation, social influence, and work-relevant decisions.

Self-regulation

Previous models of self-regulation, especially those of emotion self-regulation, have generally focused on comparing the effectiveness of different regulatory strategies (e.g., Aldao, Nolen-Hoeksema, & Schweitzer, 2010; Gross, 1998; Gross & John, 2003; Kross, Ayduk, & Mischel, 2005). This has produced an array of tactics that are now scientifically recognized as more or less beneficial ways of dealing with emotional experiences, including but not limited to: cognitive reappraisal, rumination, distancing techniques, emotion suppression, situation selection, and situation modification. These emotion regulation techniques reflect two general means by which people regulate their emotions: trying to directly control the way they feel and using the

contexts that they are in to regulate their emotions. This distinction resonates with similar theories in the literature, such as Folkman and Lazarus' (1988) emotion-focused versus problem-focused coping and Gross' (2001) process model of emotion regulation. Nonetheless, earlier models have been more concerned with the different regulatory strategies in and of themselves, and have recognized but not emphasized self-directed and situation-directed changes as two broad means of regulation. Note that although self-change sounds similar to emotion-focused coping and situation-change to problem-focused coping, they are not equivalent. For example, problem-focused coping can include both types of change—as Lazarus (1993, p. 238) put it, “the function of problem-focused coping is to change the troubled person-environment relationship by acting on the environment or oneself.” In contrast, the SSC model focuses on explaining how people's fundamental beliefs about change influence how their regulation is directed. It does not speak to the comparative effectiveness of each specific type of regulation.

Beyond emotion regulation, this approach offers implications that extend to other forms of regulation. For example, many people nowadays have weight management goals for themselves; yet their regulatory strategies vary significantly in how they go about achieving these goals. This is not surprising, given that the advice offered regarding weight regulation comes in various forms—some advocate the exercise of pure willpower to avoid one's favorite unhealthy foods, others espouse exercising off the calories, and yet others recommend modifying the consumption context (e.g., McFerran & Mukhopadhyay, 2013; Wansink, 2014). Riding on the old adage that people selectively attend to and comply with what they intrinsically believe in (Festinger, 1957; Frey, 1986), I propose that people's lay theories offer a parsimonious way to predict when people gravitate towards one form of regulation over the other. People's fundamental assumptions about the malleability of their weight and that of their consumption

contexts interact to motivate different weight management strategies. Another important insight is that we could potentially target the specific beliefs that people have in order to change their weight management strategies (e.g., Burnette & Finkel, 2010).

In essence, self-regulation can be construed as the exercise of willpower against situational forces of temptation. Whether we choose to work on one or the other can be explained by the beliefs we have about their malleability. Moreover, changing our self or situation theories could potentially influence which strategies we expect to be effective.

Social Influence

Social influence theories have long concerned how people affect one another, whether in groups or as individuals, purposefully or nonconsciously (Gilovich, Keltner, Chen, & Nisbett, 2013). Given the gravity of the implications, a great deal of research has been dedicated towards identifying important factors that explain when people are more or less likely to be influenced (e.g., Asch, 1956; Cialdini & Trost, 1998; Milgram, 1963; Zimbardo & Leippe, 1991). I offer another plausible, empirically testable factor—people’s lay theories of interpersonal malleability. Applied to interpersonal settings, such as negotiations or relationships with power differentials, the person whose position is believed to be less changeable (i.e. more fixed) holds greater capacity to persuade the other. Conversely, the person whose position is believed to be more malleable has greater potential to become the target of influence. Perceived malleability could be cued by personality traits such as openness to change and an easy-going nature, resources that confer status and power, the success or failure of previous change attempts, or even in-the-moment behavioral cues such as body language and communication style. Thus characteristics of the person and the situation provide cues that are used to form judgments of potential malleability which direct social influence.

At present, little empirical research has examined how the interaction between people's self and situation theories can affect their social influence strategies and how effective these strategies are. Existing studies have shown that people are more likely to voice their dissatisfaction to try to change their work situations and relationships when they endorse an incremental rather than entity theory of their social contexts (Chen et al., in prep; Kammrath & Dweck, 2006). In attitude change research, there are to my knowledge only two papers that have examined people's lay theories about attitude stability. One by Petrocelli and colleagues (2010) found that individuals' lay theories about attitude stability affects how much they think their own attitudes towards specific issues have changed over time, and consequently, how certain they are about their attitudes. More relevant to the SSC model, Akhtar and Wheeler (under review) showed that entity theories about *one's own* attitudes fosters greater advocacy of one's opinions, whereas entity theories about *others'* attitudes inhibits people's intentions to advocate. The SSC framework offers similar predictions, and urges researchers to further consider the *relative* malleability of persuaders' and targets' positions, beyond that of each side. In addition, it encourages a holistic consideration of the two-way interaction comprising the social influence context—who changes when depends on which side is construed as more changeable.

Organizational Decisions and Behavior

One of the most obvious domains that the SSC model resonates with is Organizational Behavior. First, the OB literature has accumulated decades of research on work behaviors related to each of the four SSC cells. Examples of relevant phenomena include: personnel selection to facilitate fit (Werbel & Johnson, 2001), organizational socialization tactics to promote new employee development (Black & Ashford, 1995; Van Maanen & Schein, 1979), job crafting by

employees (Wrzesniewski & Dutton, 2001), and middle management's negotiation between personal and role changes (Nicholson, 1984).

Second, OB theories have long identified self-change and situation-change as two important ways that people can respond to their work contexts. In his theory of work role transitions, Nicholson (1984) introduced the insight that people can adopt various combinations of personal development and role development during work transitions. Additionally, he identified specific characteristics of the person and work role that he thought were primarily responsible for these different types of adjustment, including desire for control, desire for feedback, novelty of role demands, discretion allowed in the role, and discretionary shift from a previous work role. Later empirical research, however, only found mixed results for these proposed antecedents. For example, Black and Ashford (1995) found that workers' need for control and feedback predicted personal development, but job novelty and job discretion were unrelated to the changes people enacted in their work roles. Testing Nicholson's (1984) model with MBA graduates, Ashforth and Saks (1995) found that only perceived job discretion was related to role development behaviors over time on the job, workers' desire for feedback was positively related to personal development after four months on the job but not after, and there were no interactions between the factors as Nicholson had predicted on personal and role development.

Despite the lack of empirical support for Nicholson's (1984) proposed antecedents, the SSC model resonates with his insight about two important types of change—personal and situational—and the notion that they can interact with one another. Moreover, this framework expands on Nicholson's in proposing that it is people's contextualized construals about the

stability or malleability of attributes which produces different motivational orientations—more so than the specific attributes themselves.

As proposed earlier, factors such as organizational leadership's openness to change (e.g. Detert & Burris, 2007; Dutton & Ashford, 1993) and ongoing change initiatives within the company (e.g., Crant, 2000; Dutton et al., 1997) can signal how rigid or changeable the work environment is; factors such as individuals' desire for consistency and accountability (e.g., Leventhal, Karuza, & Fry, 1980; Grant & Ashford, 2008) could play a role in fostering beliefs about personal stability or changeability. Furthermore, roles with power or status may afford greater perceived flexibility in some areas (such as the autonomy and resources to make changes; Dutton & Ashford, 1993) and less so in others (for instance, responsibility for upholding traditions). While these factors have previously been examined as antecedents of adjustment more from the perspective of individual differences among workers and characteristics of their roles and organizations (e.g., Black & Ashford, 1995; Nicholson, 1984; Saks & Ashforth, 1997; Saks, Uggerslev, & Fassina, 2007), I propose to study them vis-à-vis possible underlying lay theories of changeability. In essence, the effectiveness or ineffectiveness of any predictor depends primarily on how it alters people's *construals* of whether their relevant personal and situational attributes are changeable or not. Furthermore, it is the *interaction* between these different self and situation construals that orient how people behave in relation to their work environments. Future research on people at work may benefit from testing this theoretical approach. Understanding how different combinations of these self and situation theories predict different work behaviors, from self-selection into certain jobs to proactivity on the job, could fruitfully complement and extend current OB theorizing.

Other Areas

This lay theory approach could also be applied to other areas, such as culture and close relationships to explain *who changes when*. To the degree that relationships between people and their social systems and relationships between romantic partners reflect social interactions in which mutual influence processes are at play, we might make similar predictions to those previously described. These areas described provide rich avenues for empirical research to theoretically integrate the SSC framework approach with existing literatures within psychology and neighboring fields.

Further Questions

It is worthwhile for us to consider some questions that are directly relevant to this theoretical framework and some which pertain to lay theory research more broadly. I first address some questions that potentially arise in the current framework. Following which, I discuss some important issues germane to the lay theory literature as a whole.

Main Effects or Interaction?

In this paper, I have described both the main effects of self and situation theories and how they possibly interact with one another to influence motivation. Is our motivation always a product of equally salient self and situational malleability judgments? Not necessarily. At times, one or the other may be more salient, and therefore constitute the primary motivational force. This shows up especially in domains where one or more of the combinations of lay theories do not practically exist. For instance, there may hardly be anyone who believes that physical appearance never changes over time. And when fall progresses into a harsh winter, it is what helps people adjust themselves to the unchangeable reality of the seasons that matter most. At other times, however, it is people's simultaneous judgments of both personal and situational

aspects that matter. Take the couple arguing over how to educate their child for example. In that case, each partner's assessment of how flexible the other person is to changing views matters as much as how flexible he or she is willing to be on the matter. Thus, whether self theories, situation theories, or their combination predominantly motivate action depends to a large extent on the context they are being applied to.

Lay Theories and Reality

Lay theories, being subjective beliefs, are not always consistent with objective reality (Furnham, 1988). In any context, there are realistic limits to how much people can actually change themselves and their circumstances. A short child born to two diminutive parents, for instance, may never naturally achieve the height of a runway model, no matter how much she jumps, stretches, or modifies her diet. Likewise, no matter how changeable the average prison inmate thinks his circumstances are, the reality is more likely that he will not be able to change the prison system to what suits him. Additionally, certain types of drugs or psychopathologies distort people's perception of reality, sometimes to the extent that they imagine being able to accomplish the impossible. As in these cases, there is not always a match between what can actually be done and what people consider themselves capable of. Certain strategies, therefore, may prove unproductive in certain contexts.

In other cases, people sometimes do not see what is possible. Many often make the mistake of assuming that they cannot change their circumstances at all. We generally observe this in highly structured or hierarchical organizations, such as schools and government institutions. Tom and Sue in the opening paragraph, who view their class systems as set and their teachers' minds as irreversible, are examples of students who do not consider their circumstances

as changeable. In cases like these, people often pass up opportunities to improve their circumstances, even though the latter might actually be amendable to change.

When lay theories and reality are incongruent, what happens? On one hand, lay theories shape our subjective reality, and on the other hand, they are also held in check by reality. When these incongruencies occur, it is possible that people may change their lay theories or they may leave to look for other contexts that match their lay theories instead. Future research can examine the degree to which lay theories and objective reality overlap, and how this overlap (or lack thereof) influences people's responses and outcomes.

Goals

At present, the SSC framework does not discuss how different combinations of self and situation theories and their motivational orientations relate to people's goals. Whereas Dweck and Leggett's (1988) model centrally features people's performance and mastery goals, this framework leaves this relation as an open empirical question that more research is needed to address. Although there are obvious parallels between people's efforts to improve themselves and their efforts to improve their circumstances (i.e. mastery goals and situation-change goals), the situational equivalent to a performance-orientation is less evident. One possibility is that situation theories may influence system justification goals (Jost & Banaji, 1994) and system change goals (Johnson & Fujita, 2012)—fixed situation beliefs may foster an orientation towards justifying and validating the current status quo whereas malleable situation beliefs may motivate intentions to improve the system. Empirical research is needed to test this proposition.

Broader Questions for Lay Theory Research

While the above issues are most directly relevant to the SSC framework, there also remain big picture questions for the broader lay theories literature to address. I discuss three

which are of particular importance: First, are lay theories domain-general or domain-specific? Second, are “other people” part of the self or the situation? Third, how do lay theories come about?

Domain-General or Domain-Specific?

A common question that arises is: Are lay theories domain-specific or do people’s beliefs about stability and malleability generalize across multiple domains? On one hand, there are people who believe that street savvy can be learned but that athletic ability is inborn; on the other hand, there are also those who believe that gaining competence at any skill is all about practice and experience. Thus far, Carol Dweck and her colleagues (1995) have argued that lay theories are generally domain-specific, although people also hold theories about personality in general. These “kind of person” lay theories (Dweck, 2000) implicate many attributes and can therefore affect motivation across multiple domains, like people’s responses to relationship conflict and school bullying (Kammrath & Dweck, 2006; Yeager et al., 2011). Nonetheless, more can be done to discuss how domain-specific lay theories relate to one another and how far the effects of general lay theories extend across domains.

Measurement-wise, Dweck advises (2000), “the domain-specific measures are preferable when the study focuses on one particular domain... The domain-general measure is used when the study focuses on judgments and behavior that cut across the social and intellectual domains (such as certain stereotypes)” (p. 175-176). This heuristic allows us to explain why some studies find that domain-general lay theories about personality affect motivation in many specific areas (Kammrath & Dweck, 2006; Yeager et al., 2011), whereas others find that certain attributes like shyness and passion for work are explained by domain-specific lay theories but not by general “kind of person” lay theories (e.g., Beer, 2002; Chen et al., in press).

The SSC framework similarly adheres to these rules of thumb. For parsimony of illustration, self and situation theories have been discussed in their general terms in this paper. However, it is crucial to note that whether we make predictions that are general or domain-specific, we should match our construct to the judgment at hand. Future lay theories research could expand on what we know by studying how different domain-specific lay theories are related to one another, why they might be more strongly associated in some individuals than others, and the boundaries of motivational phenomena that general “kind of person” lay theories account for.

“Other People” as the Self or Situation?

A common question that emerges in response to the self-situation distinction is: where do “other people” fall? Although “other people” have been discussed earlier under the category of the external situation (given how previous research has operationalized them), I would like to clarify that the answer to this question is more nuanced and contextually bound.

On one hand, people’s judgments of others can sometimes be projections of their judgments of themselves, especially when they make evaluations of ingroup members whom they associate with. For instance, a person who concludes that people in general do not change their moral values may be drawing that conclusion based on an assessment of how much his or her own personal values have remained stable over time. On other occasions, people may construe others as external to them, such as when differences are made salient in times of interpersonal conflict. Take for example the couple fighting over how their child should be educated. In this case, the husband and wife are likely to make judgments of one another’s flexibility that are distinct from their judgments of themselves (in fact, the fundamental

attribution error would suggest that each party would generally accuse the other of being less flexible about a specific issue than they think they themselves are).

Prior literature has tended to measure people's lay theories about others' personalities with very generally worded items, which does not allow a clear distinction between beliefs about people in general including the self and beliefs about other people excluding the self. The traditional "kind of person" ("others" form) includes questions like the following: "The kind of person someone is, is something very basic about them and it can't be changed much.", "People can do things differently, but the important parts of who they are can't really be changed.", and "Everyone is a certain kind of person, and there is not much that can be done to really change that."

Again, it is important to consider that whether other people are seen as part of the self or the situation boils down to the judgment context. Contexts that signal inclusivity or emphasize similarity among people facilitate processing of others as part of the self (such as evaluations of one's ingroup); contexts that highlight the self as a unique entity or make differences between the self and others salient facilitate construal of others as part of the external situation (such as evaluating one's partner during a relationship conflict). Furthermore, people's reports about their global beliefs could be interpreted one way or the other depending on the judgment that they are brought to bear upon (Schwarz, 2007; Schwarz & Sudman, 1992). This is consistent with previous literature, which finds that lay theories of people's personality can affect both judgments of the self and others even within the same context (for e.g., Yeager et al., 2011, 2013). Future research should test when people tend to construe others as part of the self versus part of the situation, and the implications that these two types of beliefs have for our social lives.

Origins and Development of Lay Theories

One important question for lay theory research in general is: what determines the kind of lay theories we hold? Previous research has highlighted some factors that contribute to the development of certain lay theories, including the kind of praise children receive and teachers' classroom climates (Kamins & Dweck, 1999; Mueller & Dweck, 1998; Rattan, Savani, Naidu, & Dweck, 2012). Apart from these, there may be many other factors (including contextual factors) that influence how stable or changeable people judge a particular aspect of themselves or their situation to be. These could include how important and personally relevant an issue is, whether it is considered a moral value to the individual, and repeated experiences of success or failure in a particular domain. If a person holds a particular value as important to their identity and moral value system, then he or she may very well be less willing to compromise on it. Moreover, Leith and colleagues (2014) have shown that people are often driven by egoistical goals in the lay theories they endorse—when these egoistical goals are salient during one's experience of success, people tend to like thinking that they are naturally talented at a task; but if these goals are salient during failure, people often prefer to agree that their performance is only temporary and that they can get better at the task over time.

Factors that may influence how fixed or malleable people consider their situations to be may include: how welcome the organizational culture is to feedback and change, communication and enforcement of institutional rules, and larger societal norms. Although many of these factors have previously been studied within the Organizational Behavior literature, as described earlier, their underlying psychology can be better understood. I propose that these factors constitute organizational and societal aspects that can signal how changeable external contexts are, which influence the lay theories people hold about their situations. These beliefs could become more

chronic in nature if reinforced over time. In sum, although this question of how lay theories develop and perpetuate is beyond this paper, it is certainly a ripe avenue for empirical research to explore.

Conclusion

The SSC model builds upon prior theorizing by integrating self and situation theories to predict motivational orientations that have not previously been accounted for. First, it argues that self theories and situation theories serve complementary motivational functions. Second, it generates testable predictions about how people are inclined to react given their concurrent beliefs about their personal attributes and relevant situational aspects. When people see themselves and the external situation as fixed, they tend to seek out a good fit; when people see themselves as malleable and the relevant situation as fixed, they tend to focus on developing themselves to suit the situational demands; when people see their external situation malleable but themselves a fixed, they are motivated to shape the situation to their own needs and wants; and when people see themselves and their external situations as highly malleable, they adopt a mentality of strategically navigating multiple possibilities. Thus, this model moves us closer to a more comprehensive predictive framework of how people's lay theories of change motivate *what* people attempt to change *when*.

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*Theories, Goals and Behavior Patterns
in Achievement Situations*

Theory of intelligence	Goal orientation	Perceived present ability	Behavior pattern
Entity (Intelligence is fixed)	Performance (Goal is to gain positive judgments/ avoid negative judgments of competence)	High	Mastery oriented (Seek challenge; high persistence)
		Low	Helpless (Avoid challenge; low persistence)
Incremental (Intelligence is malleable)	Learning (Goal is to increase competence)	High or low	Mastery oriented (Seek challenge that fosters learning; high persistence)

Figure 5.1. Dweck and Leggett's (1988) model showing how lay theories of intelligence are associated with different goal orientations and behavior patterns, dependent on their perceived ability. The same motivational pattern (lay theories to goals to behaviors) applies to social motivation.

		Situation	
		More Fixed	More Malleable
Self	More Fixed	Find my Fit [Tom]	Shape my circumstances [Patrick]
	More Malleable	Develop myself [Sue]	Navigate multiple possibilities [May]

Figure 5.2. Self and Situation Change (SSC) Model of Lay Theories shows how lay theories of how changeable people and their situations are interact with one another. Each of the four white cells describe the orientations that people who have each combination of lay theories would hold—find my fit, develop myself, shape the situation, and navigate multiple possibilities. This model captures context-specific lay theory interactions, but can also be used to describe more chronic response orientations using an individual differences approach.

CHAPTER 6

Future Directions and Concluding Thoughts

The previous chapters build on one another incrementally in an effort to extend our understanding of how lay theories of change work. Self theories exemplify the transformational force of human beliefs—merely believing that attributes can change inspires effort towards self-improvement. But influential as they are, self theory effects are conditional on their context. For example, changing people’s response options to difficulty can facilitate or attenuate lay theory differences in motivation. Complementing self theory effects, situation theories motivate action towards improving the circumstances. These effects manifest across a range of domains and behaviors, including people’s intentions to voice problems at work, their willingness to sign protest petitions against restrictive institutional policies, and their engagement in collective action to change the status quo. Taken together, self and situation theories explain when people adjust themselves to their situational demands and when they act to change their circumstances, respectively. Nonetheless human psychology does not comprise of isolated beliefs about the self and the situation. Understanding how they combine, as the Self by Situation Change model illustrates, can give us a more comprehensive picture of human motivation.

The empirical studies in this dissertation provide preliminary evidence for parts of the Self by Situation Change framework. Yet, they merely scratch the surface. The SSC framework provides an array of new testable predictions that we have yet to fully investigate. A set of

studies can test whether changing an entity theorist's construals of the situation from fixed to malleable can motivate situation-change action from helplessness (i.e. going from Tom's to Patrick's reactions). Another set of studies can manipulate people's self and situation theories to test whether their combinations map onto the response orientations proposed in the four SSC cells. A third set of longitudinal studies can measure people's self and situation theories as they go through critical life transitions to understand how their responses are associated with their beliefs and also how their beliefs are shaped by these experiences. Furthermore, empirical research should explicate the role that goals and attributions play in this framework. In short, there are many exciting studies and questions just waiting to be tested.

Concluding Thoughts

A common criticism of psychological findings is that they are all "common sense" (Furnham, 1988). Many social psychological studies have tried to challenge this perception by showing that what many people consider general knowledge can often be inaccurate (e.g., Gilovich, Green, & Kahneman, 2002). In contrast, lay theory research concerns itself with the very questions of what this "common sense" entails, who has it and who does not, and what its implications are (Furnham, 1988). Because the lay theories of change literature originates from this tradition, I return to it in closing.

While we as scientists shirk the thought of denigrating our findings, there may be more to the perception that psychology is all about common sense. Our findings suggest that people change things that they think can be changed, and do not otherwise—an effective, adaptive, and seemingly obvious conclusion. Nevertheless, much of our reality is also shaped by these very behaviors. People are motivated to fulfill their fundamental assumptions about themselves and

the world, thus they often cause changes in the things they actively alter and do not in the things they deem fixed. In other words, people infer stability or changeability from the world, but their beliefs and actions also cause these very qualities. Insofar as psychology articulates common sense when people's beliefs converge with reality, we should take it as a compliment that our findings reflect a good sense of the world, common or otherwise.

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