

Divergent Consequences of Success and Failure in Japan and North America: An Investigation of Self-Improving Motivations and Malleable Selves

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Self-enhancing and self-improving motivations were investigated across cultures. Replicating past research, North Americans who failed on a task persisted less on a follow-up task than those who succeeded. In contrast, Japanese who failed persisted more than those who succeeded. The Japanese pattern is evidence for a self-improving orientation: Failures highlight where corrective efforts are needed. Japanese who failed also enhanced the importance and the diagnosticity of the task compared with those who succeeded, whereas North Americans did the opposite. Study 2 revealed that self-improving motivations are specific to the tasks on which one receives feedback. Study 3 unpackaged the cultural differences by demonstrating that they are due, at least in part, to divergent lay theories regarding the utility of effort. Study 4 addressed the problem of comparing cultures on subjective Likert scales and replicated the findings with a different measure.

"All you have to do is believe in yourself and you can accomplish anything you want." Those words represent a commonly shared piece of folk wisdom in North America. Believing in oneself, having confidence in oneself, and thinking positive and optimistic thoughts about oneself enables people to perform their best (e.g., Bandura, 1982; Seligman, 1995; Taylor & Brown, 1988). This belief is propagated through North American schools and has served as an impetus for the creation of the Task Force on Self-Esteem in California (Kahne, 1996). Empirical evidence tends to confirm the validity of these views, revealing that a heightened sense of self-efficacy and optimism often results in enhanced

achievement (e.g., Bandura, 1982; Feather, 1966; Felson, 1984; Taylor & Brown, 1988).

In recent years, however, researchers concerned with cultural variation in psychological processes have suggested that a positive focus may not be the only way to motivate the self but may be just one way—a way that is more pronounced in European American cultural contexts (Fiske, Kitayama, Markus, & Nisbett, 1997; Heine & Lehman, 1997a; Heine, Lehman, Markus, & Kitayama, 1999; Kitayama & Markus, 1999). There are other ways one can motivate oneself for achievement (De Vos, 1973; Maehr, 1974) or affirm oneself (Lebra, 1976) and, thus, maintain both objective and

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subjective well-being (Kitayama & Markus, 2000). Individual achievement and the motivation for it are not necessarily tethered to the positivity of the socially detached self and associated optimistic beliefs. Achievement and motivation can also be associated with self-critical views.

In the present article, we draw on this emerging theme from recent theorizing in cultural psychology and examine divergent motivational systems that are prevalent in two distinct cultures: Japan and North America. Our theoretical analysis is based on the notion that these regions have historically nurtured different construals of the self (Heine et al., 1999; Kitayama & Markus, 1999; Markus & Kitayama, 1991). North Americans are more likely to view the self as independent, unique, and relatively immutable, whereas East Asians tend to embrace theories of the self as interdependent, embedded, and malleable. To be sure, there is much within-culture variability and cross-cultural overlap with respect to these and all psychological characteristics or processes. Our interest is in how the different cultures promote and encourage distinct practices and ideals to which individuals respond, and thus we focus on contrasts of the variance between cultures. These cross-culturally divergent modes of being allow testable predictions of the conditions under which individuals are most motivated to work hard and persist on an ability task.

North American Self-Enhancing Motivations

Cultural practices and meanings common in contemporary North America are organized in accordance with a model of self that includes the notions that (a) a person is an autonomous entity defined by a distinctive set of attributes and qualities, (b) a configuration of these internal attributes largely determines or causes behavior, (c) these attributes are relatively immutable and constant across situations, and (d) it is good for individuals to view these attributes and processes positively (Markus & Kitayama, 1991). Many cultural practices in contemporary North America, such as corporations basing promotions and salaries on individuals' achievements, schools emphasizing the building of self-esteem (Harter, 1983; Lewis, 1995), and conversational scripts involving mutual admiration and praise exchange (Kitayama & Karasawa, 1996; Wierzbicka, 1994), are grounded in this model of self (see Heine et al., 1999, for more discussion of cultural practices that sustain self-relevant motivations among North Americans).

These cultural practices and associated beliefs, meanings, and icons encourage and afford corresponding psychological processes and structures (Kitayama & Markus, 1999). Being brought up in a cultural context composed of such practices, North Americans are likely to develop habitual psychological tendencies to identify positive attributes of the self, confirm them in private, and express them in behavior. These psychological tendencies are motivated and sustained in part by a cultural assumption that the self is a relatively fixed, stable entity. Dweck and colleagues have called this an *entity theory* of self (e.g., Chiu, Hong, & Dweck, 1997; Dweck, Hong, & Chiu, 1993; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999). If one subscribes to the theory that one's self is largely defined by a set of relatively fixed, unchangeable, and consistent inner attributes (Campbell et al., 1996; Cousins, 1989; Markus & Kitayama, 1991; Ross, 1989), a motivation to see the self and its component features in the most positive light takes on increased importance. Obtaining a positive

evaluation of the self becomes a more focal and central concern than the process of becoming a better self—an attempt at improving the self would, in fact, yield little reward if the self were largely immutable. We suggest, then, that people in these cultural contexts not only attend selectively to positive aspects of themselves (i.e., self-enhancement) but also feel especially motivated to work hard on tasks in which they excel. Such a strategy provides a greater likelihood of further enhancing the positivity of the self and maintaining the sense of self as an efficacious agent (Bandura, 1999).

Volumes of research on self-efficacy, self-esteem, self-enhancement, and self-evaluation maintenance conducted in North American cultural contexts support the present analysis. For example, highly self-efficacious people are better able to overcome dysfunctional fears and inhibitions, avoid substance abuse, and work hard in achievement settings than are those who are low in self-efficacy (e.g., Bandura, Jeffery, & Gajdos, 1975; Bandura, Reese, & Adams, 1982; Conditte & Lichtenstein, 1981; Schunk, 1981). Similarly, people who view themselves positively (as evidenced by self-esteem scores, tendencies to hold unrealistically positive self-beliefs, or recent encounters with successes) are more likely to reap a variety of benefits, including greater life satisfaction, better school achievement, and less depression (e.g., Abramson, Seligman, & Teasdale, 1978; Baumeister, 1993; Diener, 1984; Hiroto & Seligman, 1975; Taylor & Brown, 1988). The research suggests that North Americans who dwell on their strengths are able to accomplish more.

East Asian Self-Improving Motivations

In contrast, in many cultural contexts outside North America, especially those in East Asia, a different model of the self has historically been incorporated into cultural practices and meanings. This model of self includes the notions that (a) a person occupies a position within an encompassing hierarchical set of social relationships, (b) the self is relatively fluid and malleable, (c) behavior is a consequence of being responsive to role obligations within one's in-group, and (d) it is preferable for people to incorporate and adjust themselves to such role obligations and relationships (Markus & Kitayama, 1991; Su et al., 1999; Triandis, 1989). Many practices in contemporary East Asian cultures, including seniority-based systems of promotion and salary (Clark, 1979; Kang, 1990), an educational focus on group learning (Stevenson & Stigler, 1992; Tobin, Wu, & Davidson, 1989), child-rearing styles that emphasize self-discipline and cooperation with others (Hess & Azuma, 1991), and conversational scripts emphasizing constructive criticism, empathy, and sympathy (Condon, 1986; Iwatake, 1978; Kitayama & Karasawa, 1996; Kitayama & Markus, 1999), are rooted in this model of the self (for a more detailed review of cultural practices underlying Japanese self-relevant motivations, see Heine et al., 1999).

This view of self has been importantly shaped by Confucian thought. In particular, Confucianism emphasizes the importance of understanding one's roles within a hierarchy and of fulfilling obligations to others that are associated with these roles. To the extent that one has a duty to in-group members to live up to the standards of one's roles, it follows that individuals must have the potential to master the skills necessary to carry them out. The roles determine the standards of performance, and it is crucial for

individuals to adjust themselves accordingly. Thus, whereas the roles remain relatively immutable, the self must be malleable enough to be able to approximate the consensually shared standards regarding the roles (Su et al., 1999). This orientation leads to an enhanced concern for role perfection (Befu, 1986; De Vos, 1973; Doi, 1973) and sustains a lay understanding of the self as context dependent (Cousins, 1989; Kanagawa, Cross, & Markus, 2001; Suh, 2001), fluid (Campbell et al., 1996; Heine, in press), adjustable (Morling, Kitayama, & Miyamoto, in press; Su et al., 1999; Weisz, Rothbaum, & Blackburn, 1984), and, ultimately, improvable (Chiu et al., 1997).

This emphasis on improving the self toward consensually shared standards can be seen in a variety of achievement contexts in Japan. For example, traditional arts of East Asian origins, such as *sadou* (the path of tea, or, more colloquially, the tea ceremony), *kendou* (the path of the sword, or Japanese fencing), and *shodou* (the path of writing, or calligraphy), often emphasize the significance of adjusting one's mind, heart, and body to the ideal form and style as the royal road to learning and perfecting the arts. The *path* (*dou* or *michi* in Japanese) is the generic term to signify the ideal ways of performing the arts and coordinating one's mind and heart with the performance. It is interesting that when Western sports such as baseball or football are imported to Japan, they are subtly modified to fit the Japanese ethos of achievement motivation. Good or ideal forms of batting, pitching, tackling, and catching are invented or otherwise showcased and used in daily training (e.g., Whiting, 1990). This Japanization of Western sports does not necessarily lead to better performance, but the point remains that the psychosocial structure organizing the achievement has been modified to fit the general ethos of role perfection that permeates Japanese society.

Dweck and colleagues (e.g., Chiu et al., 1997; Dweck & Leggett, 1988; Hong et al., 1999) have called the belief that the self is improvable an *incremental theory* of self. If one subscribes to the theory that achievement hinges primarily on efforts (Holloway, 1988; Singleton, 1995; Stevenson & Stigler, 1992) and, thus, is changeable, then a motivation to improve the self takes on increased importance. The process of becoming a better self will be a more focal concern than evaluating the self positively—such an evaluation would be relatively uninformative and inconsequential if the self is fluid and changing. We suggest, then, that individuals in East Asian cultural contexts are socialized to attend selectively to negative attributes and aspects of themselves that are seen as improvable (i.e., self-criticism) and, furthermore, that when these negative, improvable aspects of the self are made salient, people feel especially motivated to work hard at correcting them. These self-perceptions highlight the potential of becoming a better self, a self that is expected by others from one's in-group. In short, those who participate in cultures with a Confucian heritage should be especially responsive to events that signal negativity and need for improvement of the self with increased achievement motivation.

Consistent with the foregoing analysis, evidence indicates that, on average, Japanese are more self-critical than are North Americans, as indicated by measures of self-esteem, self-enhancement, self-evaluation maintenance, self-discrepancies, and sensitivity to negative information (for a review see Heine et al., 1999). At present, however, behavioral consequences of failure or negative self-perceptions are much more poorly understood. Blinco (1992) found that Japanese first graders persisted longer than their Amer-

ican counterparts on a challenging puzzle task. Similarly, Fujinaga (1990) observed that Japanese preschoolers persisted longer on difficult concentration tasks than did American preschoolers. A recent study found that Asian Canadian students were more likely to choose to continue working on the same task if they had earlier failed than were European Canadian students (Hoshino-Browne & Spencer, 2000). We interpret these results as demonstrating that East Asians are more motivated to make efforts in situations in which they fail. Our analysis predicts that Japanese who are made aware of their weaknesses will persist longer than will those who are made aware of their strengths.

In contrast, consistent with much theorizing on self-enhancement and self-efficacy (e.g., Bandura, 1982; Taylor & Brown, 1988), we anticipate that North Americans will persist longer after they have discovered their strengths. Past research on persistence conducted with Western samples has used a variety of designs and has yielded a rather complicated pattern of results.¹ In general, though, measures of intrinsic motivation and performance tend to drop among Americans and Australians when they encounter failure (Baumeister, Hamilton, & Tice, 1985; Feather, 1966, 1968, 1969; Pyszczynski & Greenberg, 1983; Shrauger & Rosenberg, 1970), a pattern opposite to what we anticipate for Japanese according to self-improvement theory.

Present Research

This article reports four studies designed to test the divergent consequences of success and failure in achievement motivation in North Americans and Japanese. Three of these studies used an intrinsic motivation paradigm in which the degree of achievement motivation was indexed by measures of persistence on an achievement task. In most past studies of intrinsic motivation, persistence has been measured with a second task that participants were required to perform (e.g., Feather, 1966, 1968; McFarlin, Baumeister, & Blascovich, 1984; Shrauger & Sorman, 1977), a design element that we believe adds concerns for participants to perform better to compensate for their previous failures. In other studies failure feedback has been delivered publicly (e.g., Baumeister & Tice, 1985; Shrauger & Rosenberg, 1970), which we believe confounds intrinsic motivation with a desire to make a favorable impression on the experimenter. We suggest that self-enhancement in North America and self-improvement in Japan are intrinsic and instigated by a spontaneous, agentic effort to establish a culturally sanctioned form of self. Hence, these motivations are best observed in situations in which participants are allowed to freely choose whether to engage in tasks (cf. Lepper & Greene, 1975) and for which evaluative feedback is received in a private setting. In the present studies, participants neither performed in front of an experimenter nor persisted on a task that was a requirement of the experiment.

¹ The Western pattern is qualified by several factors, including the goal relevance of the task (Brunstein & Gollwitzer, 1996; found with German participants), the participant's self-esteem (e.g., Baumeister & Tice, 1985; McFarlin, Baumeister, & Blascovich, 1984), and whether the task is performed in front of a mirror (Carver, Blaney, & Scheier, 1979).

Study 1

Method

Participants. Canadian participants were introductory psychology students at the University of British Columbia (UBC). Participants were contacted through the participant pool, and because we wanted to compare Japanese participants with a Western sample, potential participants were included if their surname appeared to be of European origin. Sixty-two UBC students completed Study 1, but the data from 2 participants were eliminated because these participants expressed suspicion regarding the deception. This left a total of 60 participants (34 women and 26 men) in the Canadian sample. Japanese participants were introductory psychology students at Kyoto University. Seventy-eight Japanese participants completed Study 1, but the data from 1 were eliminated because this participant was not fluent in Japanese. None of the Japanese participants expressed suspicion regarding the deception. This resulted in a total of 77 participants (32 women and 45 men) in the Japanese sample.

Procedure. Participants were told that the purpose of the study was to assess the relation between creativity and emotional intelligence. They were first given a version of the Remote Associates Test (RAT; originally developed by Mednick, 1962), which they were told was a widely used and reliable measure of creativity. In the RAT, participants are shown three words and are asked to generate the one word that relates to the other three (e.g., *sleep*, *fantasy*, and *day* all relate to the word *dream*). Participants were informed that the experimenter would never see their responses. Participants themselves were to grade their RAT beyond the view of the experimenter and to put the graded test in an envelope when they were finished.

We had created 160 RAT items (80 in Japanese and 80 in English) and pretested them in large classes in Japan and in Canada. We eliminated items that had multiple solutions and calculated the percentage of people who answered each of the remaining items correctly. On the basis of this pretest we made three different versions of the RAT (10 items) in each language. One version comprised mostly very difficult items that few people answered correctly. Another version comprised mostly very easy items that most people answered correctly. A third version comprised items ranging in difficulty.

After the participants worked on the items for 8 min, the experimenter stopped them and gave them an answer sheet and a distribution of the RAT performance of other students from their university. Participants graded their own tests and discovered that for each item there was indeed a correct answer. They were then asked to look over the distribution sheet and circle the number they answered correctly and the corresponding percentile score. Participants in the failure condition received the difficult version of the RAT. The percentile distribution was skewed such that the vast majority of the participants discovered that they scored well below the 50th percentile. Participants in the success condition received the easy version of the RAT and an oppositely skewed percentile distribution, with the vast majority of participants discovering that they scored well above the 50th percentile. The experimenter was unaware of the assignment of condition; he or she did not know which version of the RAT the participant received. The participants put their completed materials into the envelope and signaled to the experimenter when they were finished.

The experimenter told the participants that the next phase of the study involved taking a test of emotional intelligence (EQ) on the computer. However, after starting the EQ program, the computer inexplicably crashed. The experimenter, acting confused and in somewhat of a panic, said that he or she would have to go find the professor to get a new file to make the computer work. The experimenter said that this could take a while, so if the participant wanted, he or she could work on another set of RAT items—the third set of items of varying difficulty. Participants were explicitly told that this set was not part of the study but that they were free to work on it if they desired. The experimenter then rushed out of the room and went to an observation room where he or she observed the participant

through a hidden camera. The experimenter timed how long the participant persisted on the items, up to a maximum of 15 min. When the participant stopped persisting for 90 s or reached the 15 min maximum, the experimenter returned and apologized, explaining that because he or she could not find the professor, the participant would not be able to take the EQ test. The participant was then given a follow-up questionnaire, for which the experimenter first crossed out all items regarding the EQ test in front of the participant. After completing this questionnaire, the participant was probed for suspicion and thoroughly debriefed. All Canadian participants were run through the procedure in English by a female experimenter, and Japanese participants were run through the procedure in Japanese by either a male or a female experimenter.

Materials. The questionnaire consisted of a manipulation check and some follow-up items. The manipulation check items asked participants to recall how many RAT items they had answered correctly and what their percentile score had been. They were then asked to rate on Likert scales how accurately they thought the RAT measured creativity (1 = *not at all accurately*; 4 = *very accurately*), how important they felt RAT skills are in daily life (1 = *not at all important*; 4 = *very important*), and how they felt after viewing their performance on the RAT (1 = *felt very bad*; 5 = *felt very good*). The questionnaire also included some compensatory self-enhancement items, which are discussed elsewhere (Heine, Kitayama, & Lehman, 2001), and a question asking participants to rate how important creativity is for succeeding in their culture (1 = *not at all important*; 5 = *extremely important*). Last, participants completed some demographic items.

Whereas the RAT items were originally created either in Japanese or in English, all of the questionnaire measures were translated into Japanese from English using the following procedure: A bilingual translator did an initial translation, and Steven J. Heine and Shinobu Kitayama carefully checked the translation for potentially problematic items. Then a group of four bilingual individuals discussed and resolved the problematic items.

Results and Discussion

Preliminary analyses. One Canadian assigned to the success condition failed to get enough items correct to score above the 50th percentile, and 1 Japanese assigned to the failure condition answered too many items correctly, thus scoring above the 50th percentile. The data from these 2 individuals were excluded, as the feedback they received was at odds with their assigned condition. As well, the data from an additional Canadian participant were excluded because she indicated that she scored below the 50th percentile when in fact she had scored above it. The key effects in this study remain significant even when these 3 participants' data are included.

Fifty-seven percent of the final Canadian sample was female, in contrast to 42% of the Japanese sample. These proportions are marginally different, $\chi^2(1, N = 134) = 2.88, p < .09$. Sex was included as a factor in all analyses, and sex differences are reported whenever they reach conventional levels of significance. The Canadian sample ($M = 19.4$ years) was marginally older than the Japanese sample ($M = 18.9$ years), $F(1, 134) = 3.60, p < .07$, but age did not correlate with any of the dependent variables.

Canadians assigned to the success condition answered, on average, 7.1 items correctly out of 10 ($SD = 1.8$), corresponding to the 88th percentile ($SD = 13.4$), whereas Japanese success participants averaged 6.8 items correct ($SD = 1.5$), corresponding to the 85th percentile ($SD = 11.1$). These scores are not significantly different, $F < 1$. Canadians assigned to the failure condition answered, on average, 1.6 items correctly out of 10 ($SD = 1.4$), corresponding to the 14th percentile ($SD = 11.2$), whereas Japa-

nese failure participants averaged 1.8 items correct ($SD = 1.6$), corresponding to the 15th percentile ($SD = 13.1$). These scores also are not significantly different, $F < 1$. Across conditions there was a highly significant effect for both the number of items answered correctly, $F(1, 132) = 466.59, p < .001$, and the average percentile score, $F(1, 132) = 14,795.81, p < .001$.

Persistence. A Culture \times Condition analysis of variance (ANOVA) conducted on the amount of time participants persisted on the second set of RAT items revealed a highly significant interaction, $F(1, 127) = 16.54, p < .001$. Simple effects analyses revealed that Canadians who had succeeded ($M = 735.9$ s, $SD = 173.7$) persisted significantly longer than did those who had failed ($M = 603.1$ s, $SD = 204.7$), $F(1, 55) = 6.27, p < .02$ (see Figure 1). This replicates much past research on persistence in Westerners (Baumeister et al., 1985; Feather, 1966, 1968, 1969; Frankel & Snyder, 1978; Pyszczynski & Greenberg, 1983; Shrauger & Rosenberg, 1970). Apparently, discovering that they were talented on the RAT motivated Canadians to persist longer on the second set of items, as compared with their counterparts who had initially discovered that they had done poorly. In stark contrast, Japanese who had succeeded ($M = 586.7$ s, $SD = 298.0$) persisted significantly less than did those who had failed ($M = 779.0$ s, $SD = 184.0$), $F(1, 72) = 11.43, p < .002$. Japanese were more motivated to continue working on the RAT after discovering that they were poor at the task than after discovering that they were adept at it.²

Questionnaire measures. Participants were asked a number of follow-up questions with respect to their thoughts about the RAT and creativity. First, they were asked to indicate how accurately they felt the RAT measured creativity. A significant Culture \times Condition interaction emerged, $F(1, 127) = 12.18, p < .001$. Simple effects analyses revealed that Canadians who discovered that they did well believed the test to be more accurate than did those who discovered that they did poorly, $F(1, 55) = 18.03, p < .001$ (see Table 1).³

Japanese, in contrast, displayed a nonsignificant tendency to view the test as more accurate when they had failed than when they

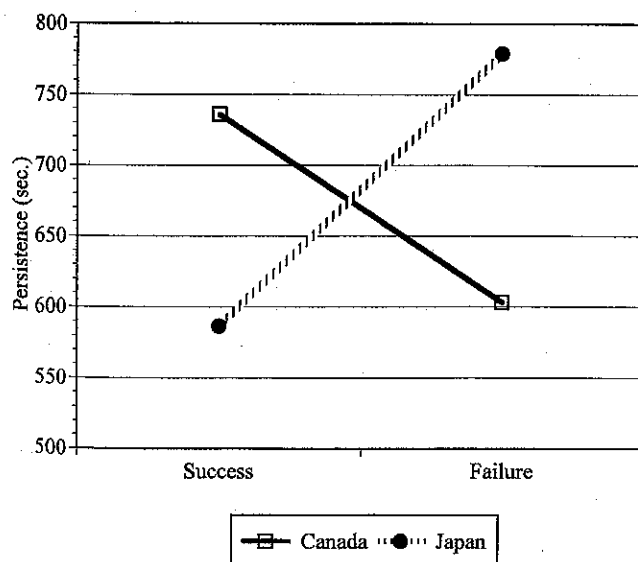


Figure 1. Study 1: Persistence time.

Table 1
Responses to Questionnaire Items in Study 1

Questionnaire item	Canadians		Japanese	
	Success	Failure	Success	Failure
Perceived accuracy of the task				
<i>M</i>	2.89***	2.06***	2.20	2.27
<i>SD</i>	0.57	0.85	0.69	0.71
Feelings following the feedback				
<i>M</i>	4.06***	2.41***	3.37***	2.33***
<i>SD</i>	0.69	0.72	0.72	0.87
Importance of remote associations skills				
<i>M</i>	2.92***	2.06***	2.59	2.25
<i>SD</i>	0.80	0.65	0.76	0.81
Importance of creativity				
<i>M</i>	3.88	3.47	4.38*	4.76*
<i>SD</i>	1.07	1.05	0.83	0.50

Note. Significance levels represent the degree to which success and failure conditions are different within cultures.

* $p < .05$. *** $p < .001$.

had succeeded, $F < 1$. Thus, Japanese did not exhibit the self-enhancing tendency displayed by Canadians to discount the accuracy of a test that yielded undesirable results. This cross-cultural difference has been observed in other studies (Heine & Lehman, 1997b; Heine, Takata, & Lehman, 2000).

Participants were also asked how they felt about themselves after learning about their performance on the RAT. A significant Culture \times Condition interaction emerged, $F(1, 125) = 4.80, p < .04$. Participants from both cultures reported feeling better after success than after failure (both $ps < .001$). However, simple effects analyses revealed that although participants from both cultures felt equally bad after failure, $F < 1$, Canadians felt significantly better than did Japanese after success, $F(1, 59) = 14.96, p < .001$. Canadians, who have a more self-enhancing orientation, appear to reap more emotional benefits from success than do Japanese.

² There was a Sex \times Country interaction, $F(1, 127) = 6.58, p < .02$. Simple effects analyses revealed that whereas there was no difference in persistence between Canadian men and women, $F(1, 55) < 1$, Japanese women ($M = 761.80, SD = 214.00$) persisted longer than did Japanese men ($M = 603.90, SD = 275.00$), regardless of condition, $F(1, 72) = 7.71, p < .01$. This sex difference was not replicated in subsequent studies. When we examined each sex separately, we found that the Culture \times Condition interaction was significant both for women, $F(1, 62) = 6.06, p < .02$, and for men, $F(1, 67) = 11.49, p < .002$.

³ This effect was qualified by a significant Sex \times Condition interaction among Canadians, $F(1, 55) = 7.49, p < .01$. Simple effects analyses revealed that Canadian women exhibited a slight but nonsignificant tendency to view the test as less accurate when they had failed, $F(1, 32) = 1.49, ns$, whereas Canadian men displayed a strong tendency to discount the accuracy of the test after failure, $F(1, 23) = 19.40, p < .001$. This Sex \times Condition interaction was not replicated in subsequent studies. When we examined each sex separately, we found that there was a highly significant Culture \times Condition interaction for men, $F(1, 67) = 19.88, p < .001$, but not for women, $F < 1$.

Two items in the follow-up questionnaire assessed the perceived importance of remote association skills and creativity. The first question, which asked how important remote association skills are for succeeding in life, revealed a marginal Culture \times Condition interaction, $F(1, 127) = 3.85, p < .06$. Simple effects analyses revealed that whereas Canadians viewed remote association skills to be more important for succeeding in life if they had done well on the test than if they had done poorly, $F(1, 55) = 20.28, p < .001$, Japanese importance ratings were not significantly affected by the feedback, $F(1, 72) = 2.72, p > .10$. A second question asked how important creativity is for succeeding in society. A significant Culture \times Condition interaction emerged here, $F(1, 124) = 6.13, p < .02$. Canadians viewed creativity to be nonsignificantly less important if they had failed than if they had succeeded, $F(1, 54) = 1.29, ns$, whereas Japanese viewed creativity to be significantly more important if they had failed than if they had succeeded, $F(1, 73) = 5.16, p < .03$. Canadians thus appeared to disarm the threat of their failures by minimizing the importance of remote association skills and creativity relative to their successes. In contrast, Japanese exhibited further evidence of a self-improvement orientation by viewing what they did poorly at as especially important, perhaps as a means of underscoring the need for efforts to improve.

The results of Study 1 provide evidence that failure tends to serve as a motivating force for Japanese, whereas Canadians are more motivated by success. One alternative account for the pattern revealed in Study 1 deserves comment. The Japanese sample came from Kyoto University, the Number 2 ranked public university in Japan. These students are, on average, a highly select, overachieving group who are likely used to successfully surmounting challenges through their efforts. Indeed, every one of them had successfully passed an extraordinarily difficult entrance exam that required years of hard work and preparation. Perhaps the self-improving pattern exhibited by the Japanese students in Study 1 owes to the unusual nature of this sample; self-improvement may characterize the motivations of the top echelon of achievers rather than Japanese in general.

This account would lose plausibility if the Japanese pattern replicated with a less exclusive sample. We conducted a replication of the Japanese part of the study with students at Nara University, in Nara, Japan. Nara University is a private 4-year school, ranked approximately in the middle of the distribution of Japanese universities. The study was run identically except that because of time constraints in running individual participants, we used an 8-item RAT measure. All of the results replicated the findings from the Kyoto University sample in Study 1. Most notably, Nara University students also persisted significantly longer after failure ($M = 706.7$ s, $SD = 245.6$) than after success ($M = 532.7$ s, $SD = 281.6$), $F(1, 44) = 4.99, p < .04$. A Japanese self-improving orientation within this paradigm, therefore, is not restricted to students from Japan's most prestigious institutions.

Study 2

Study 1 provides evidence that Japanese are more motivated to work on a task following failure than following success, whereas Canadians are more motivated to persist after success than after failure. We assessed this motivation by measuring how long participants chose to persist on a task versus to sit alone in a room

doing nothing. It is unclear in Study 1 whether the motivation was just to be doing something or if it was specific to the task on which the participants received feedback. Perhaps failure feedback leads Japanese to be fretful, so they desire to work on whatever is available rather than being specifically motivated to correct their newly identified shortcoming. Likewise, perhaps success feedback served as an "adrenaline rush" for Canadians, motivating them to put their efforts into any available activity. In Study 2 we explored whether self-improving and self-enhancing motivations are task specific by providing Japanese and American participants with two different tasks to work on while the experimenter was absent. We anticipated that the feedback would be motivating specifically for the task relevant to the feedback but not for the other task.

Study 2 also investigated the degree to which this cultural difference in persistence is mediated by beliefs about the malleability of the self. We have argued that in North America the self is viewed as relatively fixed and immutable compared with how it is viewed in Japan. Dweck and colleagues (Chiu et al., 1997; Dweck & Leggett, 1988; Hong, Chiu, & Dweck, 1995; Hong et al., 1999) proposed that such beliefs are reflected in individuals' implicit theories regarding whether the self is viewed as incremental or as an entity. Dweck and colleagues have made a convincing case that lay theories cognitively represented as personal beliefs among individuals can significantly mediate individuals' psychological responses (e.g., Dweck et al., 1993). For example, incremental theorists have been shown to persist more after repeated failures (e.g., Hong et al., 1999). Hence, the motivational tendency predominant in a given culture, discussed here, may well be mediated by lay theories individually held by members of the culture.

Method

Participants. American participants were students at the University of Pennsylvania who took part in the study to receive either course credit or \$8 cash. Participants responded to advertisements inviting them to participate with the restrictions that English be their first language and that they have been born in the United States. Seventy students participated, but the data from 3 were excluded because 1 participant was suspicious of the deception, a 2nd discovered the hidden camera, and a 3rd did not follow the experimenter's instructions. This resulted in a U.S. sample of 67 participants (49 women and 18 men).

Japanese participants were psychology students at Kyoto University who took part in the study for course credit. Ninety-one students (21 women and 70 men) participated.

Procedure. Participants were told that the purpose of the study was to investigate the relations between pattern recognition skills and emotional intelligence. In contrast to Study 1, creativity was never mentioned, although participants were told that pattern recognition was an important dimension of IQ. We wanted to see whether the obtained effects generalized beyond assessments of creativity. Before taking part in the RAT, participants completed a brief questionnaire that contained a three-item measure of implicit theories regarding the fixed nature of personality (Chiu et al., 1997). These items were "The kind of person someone is is something very basic about them and it can't be changed very much," "People can learn to 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." All items were answered on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Because items regarding incremental theories appear to elicit ceiling effects in responses, the three items were all reverse-scored. Much research supports the validity of this method of assessing incremental theories (e.g., Chiu et al., 1997; Norenzayan, Choi, & Nisbett, 1999).

Next, participants were given either an easy or a difficult version of the RAT (some of the items were changed from Study 1 to make the easy version slightly more challenging and the difficult version slightly less challenging), and they graded their own answers and checked how they did relative to others on a bogus percentile distribution. Again, the computer crashed during the EQ test, and participants were left alone as the experimenter ostensibly was trying to find the professor. In fact, he was in an observation room timing the participant's persistence.

Unlike Study 1, this time the participant was left with two tasks with which he or she could pass the time. On one side of a sheet of paper was the second set of RAT items (this time the set included some impossible items to prevent the possibility that some participants might complete all of the items). On the other side of the sheet was a geometric figure tracing task (GFT), adopted from Feather (1961), in which participants were instructed to try to trace a figure without lifting their pencil or retracing a line. The participants were briefly shown the GFT as the experimenter was leaving, and they were told they could do whatever they liked to pass the time and that neither task was part of the experiment. From the observation room, the experimenter timed how long the participant persisted on each of the tasks (the participants often switched back and forth between the two) until the participant quit or had worked for a total of 20 min, whichever came first.

The participant was then given a follow-up questionnaire including the same items as in Study 1 (except that all mentions of creativity were replaced with mentions of pattern recognition skills). Each participant was then probed for suspicion and thoroughly debriefed. American participants were run through the experiment in English by a male experimenter, and Japanese participants were run in Japanese by a male experimenter.

Results and Discussion

Preliminary analyses. Two Americans and 2 Japanese assigned to the failure condition answered too many items correctly, and 3 Japanese assigned to the success condition failed to answer enough items correctly, so they each ended up receiving feedback opposite to what they had been assigned. These 7 participants were excluded from the final analyses. Furthermore, 1 American and 2 Japanese incorrectly remembered their percentile score, and they too were removed from the analyses. This left a final U.S. sample of 64 participants (33 success, 31 failure) and a final Japanese sample of 84 participants (40 success and 44 failure). All of the key analyses remained significant when these 10 participants' data were included.

Seventy-three percent of the U.S. sample was female, in contrast to 25% of the Japanese sample. These proportions are significantly different, $\chi^2(1, N = 148) = 34.32, p < .001$. Sex was included as a factor in all analyses, but none of the effects were statistically significant. The two samples did not differ with respect to age, $F(1, 147) = 1.74, ns$.

Americans assigned to the success condition averaged 6.6 items correct out of 10 ($SD = 1.6$), corresponding to the 83rd percentile ($SD = 10.1$). Japanese success participants averaged 5.3 items correct out of 10 ($SD = 1.4$), corresponding to the 75th percentile ($SD = 11.0$). These scores were significantly different, $F(1, 73) = 10.86, p < .002$, indicating that the English items were relatively easier than the Japanese items, thereby rendering the success feedback more positive for Americans than for Japanese. In the failure condition Americans averaged 3.5 items correct out of 10 ($SD = 1.2$), corresponding to the 24th percentile ($SD = 6.8$), whereas Japanese participants averaged 3.1 items correct ($SD = 1.4$), corresponding to the 22nd percentile ($SD = 7.5$). These scores were not significantly different, $F(1, 73) = 1.54, ns$.

Across conditions, there was a significant effect for number correct, $F(1, 148) = 124.90, p < .001$; and percentile feedback, $F(1, 148) = 1301.18, p < .001$.

Persistence. Culture \times Condition ANOVAs were conducted on the amount of time participants spent on both the second set of RAT items and the GFT. Replicating our findings in Study 1, a significant interaction emerged for persistence on the RAT items, $F(1, 140) = 11.34, p < .001$. Simple effects analyses revealed that whereas Americans persisted marginally longer following success feedback ($M = 510.2$ s, $SD = 300.4$) than following failure feedback ($M = 375.4$ s, $SD = 269.2$), $F(1, 60) = 2.78, p = .10$, Japanese persisted significantly longer following failure feedback ($M = 585.5$ s, $SD = 258.3$) than following success feedback ($M = 364.9$ s, $SD = 282.5$), $F(1, 80) = 10.28, p < .002$ (see Figure 2). Again, we observe evidence for Japanese being more motivated by failure than by success, and we find a marginal tendency for Americans to be more motivated by success than by failure.

Time spent persisting on the GFT task did not produce a significant interaction, $F(1, 140) = 2.29, ns$. Americans displayed a nonsignificant trend to work longer on the GFT task after receiving failure feedback on the RAT ($M = 320.5$ s, $SD = 327.9$) than after receiving success feedback on the RAT ($M = 213.7$ s, $SD = 350.5$), $F(1, 60) = 1.25, ns$. Japanese, in contrast, exhibited a nonsignificant trend to persist less on the GFT task after receiving failure feedback on the RAT ($M = 146.9$ s, $SD = 225.4$) than after receiving success feedback on the RAT ($M = 211.1$ s, $SD = 301.0$), $F < 1$. Thus, there was a slight tendency for Americans to be more likely to switch tasks if they had failed and for Japanese to switch if they had succeeded.

A repeated measures ANOVA of persistence on the two tasks revealed a significant Culture \times Condition interaction, $F(1,$

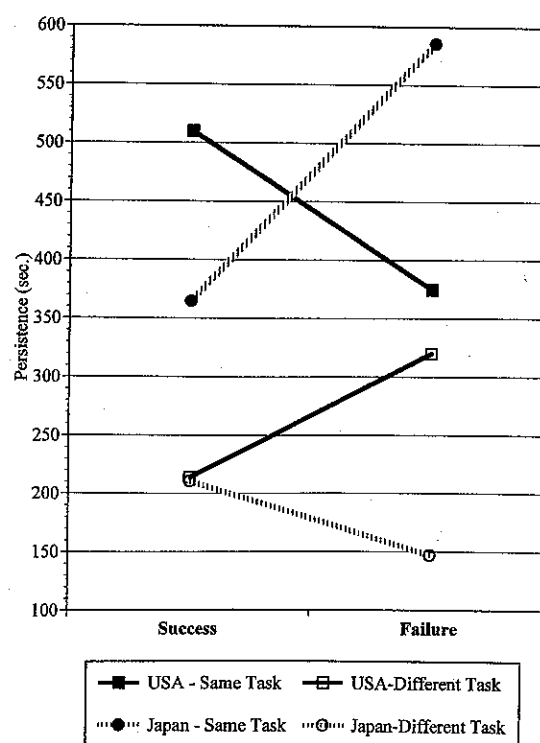


Figure 2. Study 2: Persistence time.

140) = 8.66, $p < .004$. Americans displayed a nonsignificant trend to prefer the RAT over the GFT task more after succeeding than after failing, $F(1, 60) = 2.67$, $p < .11$, whereas Japanese were significantly more likely to prefer the RAT over the GFT after failing than after succeeding, $F(1, 80) = 6.88$, $p = .01$.

Questionnaire items. Correlational analyses were conducted between participants' scores on the Implicit Theory Measure (ITM) and the amount of time they persisted on the second set of RAT items. Cronbach's alpha for this three-item scale was .88 for Americans and .83 for Japanese. Although the ITM was uncorrelated with persistence for both cultural groups after success feedback ($r = -.04$ and $-.02$, both *ns*, for Americans and Japanese, respectively), there was a nonsignificant positive correlation after failure, ($r = .29$, $p < .11$, and $r = .24$, $p < .12$, for Americans and Japanese, respectively). As the correlations were similar in magnitude across cultures, we concatenated the samples to boost the statistical power of the analyses. After success feedback there was no correlation between persistence and ITM ($r = -.01$, *ns*); however, after failure feedback there was a significant positive correlation ($r = .24$, $p < .03$). Those who endorsed more of an incremental theory of personality tended to persist longer following failure. This within-culture pattern parallels the pattern observed between cultures. That the ITM bore no relation to persistence following success for either culture suggests that this measure captures the motivation to correct one's shortcomings rather than one's overall tendencies to make efforts (Hong et al., 1999).

However, between-cultures comparisons of the extent to which participants endorsed the ITM items revealed no cultural differences, $F < 1$, (for Americans, $M = 3.2$, $SD = 0.9$; for Japanese, $M = 3.1$, $SD = 1.0$). This lack of a difference is conceptually at odds with much other research that finds East Asians less likely to focus on fixed dispositions than are North Americans (e.g., Morris & Peng, 1994; Stevenson & Stigler, 1992; Suh, 2001), and it is surprising. We are cautious in interpreting this null effect, as cross-cultural comparisons of mean scores of attitude scales are compromised by a number of methodological artifacts, including reference-group effects (Heine, Lehman, Peng, & Greenholtz, 2001; Peng, Nisbett, & Wong, 1997). We return to this issue in Studies 3 and 4.

In the follow-up questionnaire participants also were asked to indicate how accurately they thought the RAT measured pattern recognition skills. Replicating the pattern observed in Study 1, a significant Culture \times Condition interaction emerged, $F(1, 142) = 28.85$, $p < .001$. Simple effects analyses revealed that Americans in the success condition believed the test to be significantly more accurate than did those in the failure condition, $F(1, 62) = 19.31$, $p < .001$ (see Table 2). Japanese, in contrast, viewed the test as significantly more accurate when they had failed than when they had succeeded, $F(1, 80) = 10.14$, $p < .01$. This pattern is evidence for self-enhancement among Americans and self-criticism among Japanese.

Participants also were asked how they felt about themselves after seeing their performance on the RAT. Replicating our findings from Study 1, a significant Culture \times Condition interaction emerged, $F(1, 140) = 4.32$, $p < .04$. Although participants from both cultures reported feeling better after receiving success than failure feedback (both $ps < .01$), there were nonsignificant trends for Americans to feel better than Japanese after success, $F(1,$

Table 2
Responses to Questionnaire Items in Study 2

Questionnaire item	Americans		Japanese	
	Success	Failure	Success	Failure
Perceived accuracy of the task				
<i>M</i>	2.98***	2.21***	2.07**	2.61**
<i>SD</i>	0.53	0.73	0.63	0.69
Feelings following the feedback				
<i>M</i>	3.39***	2.18***	2.97**	2.38**
<i>SD</i>	0.78	0.58	0.88	0.82
Importance of pattern recognition skills				
<i>M</i>	3.15†	2.82†	1.87	2.20
<i>SD</i>	0.82	0.73	0.74	0.82

Note. Significance levels represent the degree to which success and failure conditions are different within cultures.

† $p < .09$. ** $p < .01$. *** $p < .001$.

71) = 2.45, $p < .13$, and for Japanese to feel better than Americans after failure, $F(1, 71) = 1.06$, *ns*.

Also replicating findings from Study 1, a significant Culture \times Condition interaction emerged with respect to how important participants viewed pattern recognition skills to be for succeeding in life, $F(1, 139) = 4.83$, $p < .03$. Simple effects analyses revealed that although Americans viewed pattern recognition skills to be marginally more important for succeeding in life if they had done well on the test than if they had done poorly, $F(1, 61) = 2.99$, $p < .09$, Japanese viewed pattern recognition skills as nonsignificantly less important when they had succeeded on the task than when they had failed, $F(1, 80) = 2.71$, $p < .11$. Across Studies 1 and 2, then, we observed a tendency for North Americans to discount the importance of a task on which they did poorly (or to enhance the importance of a task on which they did well) and for Japanese to do the opposite.

Study 3

We propose that one reason for the two cultural groups' different reactions to success and failure is that Japanese individuals are more likely to view their self and their performance as potentially improvable. Study 2 provides partial support for this hypothesis in demonstrating that within-culture differences in incremental theories of the self paralleled between-cultures differences in persistence after failure, although the cultures did not differ in terms of their mean scores on the ITM. Study 3 is meant to provide more direct evidence on this issue.

Much cross-cultural research strives to "unpack" cultures (Bond, 1994)—that is, to find the underlying variables behind the cultural differences. Typical approaches to this unpacking have been similar to what we did in Study 2: that is, use a trait measure to measure the variable hypothesized to be behind the cultural difference, then correlate this variable with the dependent variable within each culture. To the extent that the cultures' mean scores on the measure differ in the predicted direction and the within-culture correlations parallel the between-cultures correlations, the variable

is seen to (at least partly) drive the cultural difference. This approach has been used successfully in a number of studies (e.g., Heine & Renshaw, in press; Kwan, Bond, & Singelis, 1997; Singelis, Bond, Lai, & Sharkey, 1999).

However, the success of this unpacking approach is constrained by the validity of the trait measure in identifying cultural differences in the means of the underlying construct. As a number of researchers have discovered (e.g., Heine et al., 2001; Matsumoto, 1999; Peng et al., 1997; Takano & Osaka, 1999), cross-cultural comparisons of mean scores of trait or attitude measures often fail to yield the cultural differences observed with other methodologies. If a cultural difference does not emerge in the measure of the key construct under study, the measure cannot be used to unpack the cultures. For example, as we found in Study 2, if Japanese do not score higher than Americans on the ITM, it weakens the case that the cultural difference in persistence is due to different beliefs in the malleability of selves.

We sought to unpack culture in a way that avoided measuring culture through trait or attitude scales. We reasoned that to the extent that Japanese and Americans differ in the lay theories that they most commonly possess, they should respond differently to information that is either consistent or inconsistent with these theories. That is, if Japanese already possess the belief that achievement can be improved through efforts, then providing them with information that says that effort is useful should have little impact on their behavior. Such information is redundant with their lay theory. In contrast, if Japanese confronted information stating that people's abilities are fixed and, thus, efforts are not useful, their behavior should be influenced. In this case they would have encountered new information to guide their behavior. Likewise, if most Americans already tend to possess the theory that performance on psychological tests such as the RAT indicates their underlying abilities, not their efforts, then their behavior should be influenced by information suggesting that effort facilitates performance and should not be influenced by information suggesting that efforts will not enhance performance. This approach constitutes an experimental solution to unpacking cultures.

Method

Participants. American participants were introductory psychology students at the University of Pennsylvania who received extra credit for their participation. A total of 99 participants were run through the experiment, but 7 were excluded from analyses because 2 discovered the hidden camera, 2 did not read the manipulation, 1 did not follow the experimenter's instructions, and 2 were suspicious of the deception. This left a sample of 92 (48 women and 44 men).

Japanese participants were students from psychology classes at Kyoto University who also received extra credit for their participation. A total of 102 participants were run through the experiment, but 9 were excluded from analyses because 1 discovered the hidden camera, 1 did not read the manipulation, and 7 were suspicious about the computer breakdown and the second set of items. Each of these 7 suspicious students either had taken part in a previous study that involved deception or had already taken a social psychology course. It is important to note that the significant effects remained when all suspicious participants were included in the analyses. This resulted in a Japanese sample of 93 (46 women and 47 men).

Procedure. This study was identical to Study 1 except for the following changes. All participants received failure feedback on the RAT (which, as in Study 2, they were told was a measure of pattern recognition skills). Also as in Study 2, participants received the ITM at the beginning of the

study. When the computer crashed and participants were left alone in the lab, they received one of three different versions of the RAT. Assignment to condition was random, and the experimenter remained unaware of the version that was given to participants. All three versions contained identical items, but they differed with respect to the instructions that were written on the top of the page. One condition was a control condition in which participants received no instructions about the RAT. The other two conditions contained instructions at the top of the page (to reduce suspicion regarding why this version of the RAT had instructions, whereas the first version that they had taken had not, the second set was made to appear from a different source). These instructions were in bold and were in a prominent box labeled "Tips for Answering the Items." Participants in the high effort condition read instructions that emphasized how performance on the RAT is malleable and is thus facilitated by effort. The specific instructions read as follows:

For these types of questions the distinction between those who can and those who can't solve them is negligible. There are cases when the answer quickly pops into your head, but even it doesn't, if you keep trying and keep listing different words you will definitely stumble upon the right answer. Try to think of as many words as possible.

Participants in the low effort condition read instructions that emphasized that performance on the test was largely due to fixed abilities and was thus independent of effort. These instructions read as follows:

For these types of questions there is a clear distinction between those who can and those who can't solve them. For those who can, the answer is likely to just pop into their heads. For those who can't, the answer is not likely to come to them no matter how long they try or how many different words they list. Try to use your intuitions to come up with the right answer.

During the debriefing, the experimenter asked the participants directly to recall the instructions that they had read on the second version of the RAT as a manipulation check. All materials were translated using the same procedure as in the previous studies. American participants were run through the experiment in English by a female experimenter, and Japanese participants were run in Japanese by either a female or male experimenter.

Results and Discussion

Preliminary analyses. One Japanese and 1 American answered too many items correctly and were removed from the analyses. This left a final U.S. sample of 91 participants (48 women, 43 men) and a final Japanese sample of 92 (46 women, 46 men). The sex proportions did not differ across the two samples. The Japanese ($M = 19.1$) were significantly older than the Americans ($M = 18.6$), $F(1, 182) = 4.41, p < .05$; however, age did not correlate with the dependent measures for either cultural group.

Americans averaged 3.4 items correct ($SD = 1.4$), corresponding to the 24th percentile, whereas Japanese averaged 2.9 items correct ($SD = 1.6$), placing them, on average, in the 22nd percentile. These scores were significantly different, $F(1, 182) = 6.17, p < .02$, indicating that the English items were slightly easier than the Japanese items.

Persistence. We analyzed persistence time by conducting a two-way ANOVA (Culture \times Condition). A main effect for culture emerged, $F(1, 178) = 22.97, p < .001$, revealing that, on average, Japanese persisted longer after failure ($M = 700.8$ s) than did Americans ($M = 438.4$ s). None of the other effects were significant.

We hypothesized that high effort instructions would convey no new information for Japanese and that low effort instructions

would appear to be relatively novel and would decrease the Japanese participants' persistence. That is, we predicted that Japanese in the low effort condition would persist less than would those in both the control condition and the high effort condition and that these latter two conditions would not differ from each other. Thus, for the Japanese sample we assigned the weights -2 , 1 , and 1 to the low effort, control, and high effort conditions, respectively. In contrast, we hypothesized that low effort instructions would be redundant with the common lay theories possessed by Americans regarding the RAT and that high effort instructions would be somewhat novel and would increase the American participants' persistence. That is, we anticipated that Americans in the high effort condition would persist longer than would those in both the low effort and control conditions and that these latter two conditions would not differ. For the American sample, we thus assigned the weights -1 , -1 , and 2 to low effort, control, and high effort conditions, respectively. A planned comparison analysis with these weights revealed a significant effect, $F(1, 178) = 6.91, p < .01$. Members of the two cultures did appear to respond to the instructions differently, and in the manner that we predicted.

We followed up this analysis by comparing persistence between the control condition and each of the experimental conditions within each cultural sample using one-way t tests. First, we compared whether participants who received high effort instructions persisted longer than did those who received no instructions. Japanese in the high effort condition ($M = 711.9, SD = 345.8$) did not persist any longer than did those in the control condition ($M = 771.8, SD = 324.6$), $t < 1$ (see Figure 3). This suggests that the high effort instructions provided no new information to Japanese. In contrast, American participants in the high effort condition ($M = 562.2, SD = 311.7$) persisted significantly longer than did those who received no instructions ($M = 412.6, SD = 390.3$), one-way $t(59) = 1.64, p = .053$. That is, the high effort instruc-

tions appeared to provide Americans with new information that influenced their behavior.

Turning to analyses of the low effort instructions, Japanese in the low effort condition ($M = 614.1, SD = 309.2$) persisted significantly less than did those who received no instructions ($M = 771.8, SD = 324.6$), one-way $t(60) = 1.94, p < .03$. That is, the low effort instructions appeared to convey new information to Japanese. In contrast, American participants in the low effort condition ($M = 415.3, SD = 313.8$) did not persist any less than did those in the control condition ($M = 412.6, SD = 390.3$), $t < 1$. This suggests that the low effort instructions did not provide Americans with new information.

Between-cultures analyses for the control condition replicated Studies 1 and 2 in that Japanese persisted longer on the RAT following failure than did Americans, $F(1, 59) = 15.32, p < .001$. Japanese also persisted significantly longer than did Americans in the low effort condition, $F(1, 59) = 6.21, p < .02$, and marginally longer in the high effort condition, $F(1, 60) = 3.19, p < .08$. This suggests that our manipulation was not strong enough to override the cultural differences in the lay theories that our participants embraced. Indeed, Americans who received high effort instructions still did not persist quite as long as did Japanese who received low effort instructions. It makes sense that lay theories sustained over a lifetime are more predictive of behavior than is an experimental manipulation.

ITM items. An ANOVA again revealed no difference between the groups on the ITM (for Americans, $M = 3.2, SD = 0.9$; for Japanese, $M = 3.2, SD = 1.1$; $F < 1$). The differences between the control and experimental conditions reported in Study 3 increase suspicion about this null pattern, an issue we address in Study 4.

Failing to replicate our findings from Study 2, however, the correlation between persistence time and ITM score in the control condition did not reach significance ($r = .20, ns$), although it was nominally in the same direction. This suggests that caution should be exercised in interpreting the small but significant relation found in Study 2. Combining the data from Studies 2 and 3 reveals a modest but significant correlation between the ITM and persistence time after failure ($r = .24, p < .01$).

Study 4

Study 3 provides evidence that one factor accounting for the greater persistence in the face of failure for Japanese is the fact that Japanese believe that abilities are less fixed than Americans believe they are. It is surprising, therefore, that neither Study 2 nor Study 3 revealed a difference in the mean scores of Japanese and American responses to the ITM. Moreover, much past research from a number of different disciplines and using a variety of methodologies has provided evidence that is discrepant with the null pattern found with the ITM. For example, Japanese (and other East Asian groups) have been shown to have a more malleable sense of self than North Americans in the sense that they (a) are more likely to report feeling differently about themselves across situations (Campbell et al., 1996; Kanagawa et al., 2001; Suh, 2001), (b) are more likely to view achievement as a product of effort (e.g., Holloway, 1988; Stevenson & Stigler, 1992), (c) are less likely to make dispositional attributions (Choi & Nisbett, 1998; Kitayama, Masuda, & Lehman, 2000; Morris & Peng, 1994), (d) are more likely to make unstable attributions about their

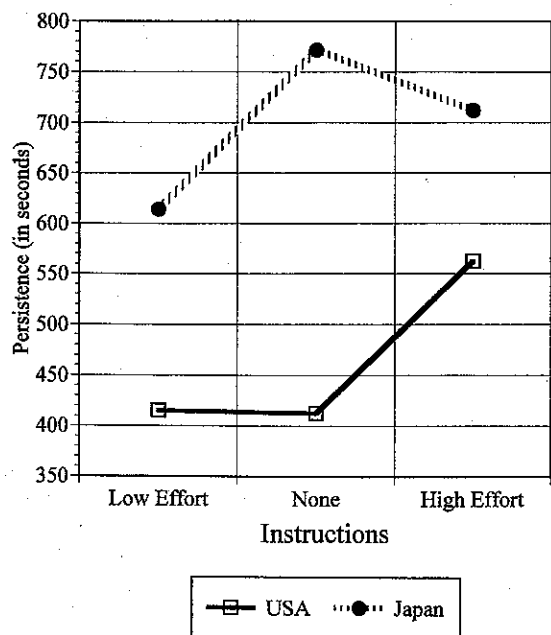


Figure 3. Study 3: Persistence time.

performance (Kashima & Triandis, 1986; Kitayama, Takagi, & Matsumoto, 1995), (e) are more likely to try to change themselves than to try to change their environment (Morling et al., in press; Weisz et al., 1984), (f) are less likely to view people as having innate differences in abilities (Tobin et al., 1989), and (g) in general, are described as having fluid selves that accommodate different situational and role pressures (Bachnik & Quinn, 1994; Hamaguchi, 1985; Heine, in press; Lebra, 1976; Rosenberger, 1992). There is a striking inconsistency between these other sources of evidence and the cultural comparisons of mean scores on the ITM. Study 4 is an exploratory attempt to address this inconsistency.

One possible account for the failure to find a cultural difference in the ITM in Studies 2 and 3 is the confounding effects that different reference groups have on cross-cultural comparisons of means of subjective Likert scales (Heine et al., 2001; Peng, et al., 1997; cf. Biernat & Manis, 1994). When answering items using a subjective Likert scale, participants base their responses in part on social comparison with similar others. The endpoints of Likert scales are assigned on the basis of an implicit comparison with standards shared by those individuals in the reference group (Biernat & Manis, 1994; Heine et al., 2001). For example, to strongly agree with an item suggests implicitly that one's agreement is perhaps stronger than that of others. Because those others with whom one compares oneself are different people in different cultures (e.g., Americans evaluate their attitudes by comparing themselves with Americans, not Japanese), the norms also potentially vary across cultures, thereby confounding cross-cultural comparisons. Subjective Likert scales can capture one's feelings relative to a comparison group or shared norm, but they do not provide a context-free assessment of one's absolute standing (Biernat & Manis, 1994; Biernat, Manis, & Nelson, 1991). Indeed, comparisons of mean responses on attitude and trait scales that measure psychological constructs such as individualism-collectivism often fail to find predicted cultural differences (Heine et al., 2001; Matsumoto, 1999; Peng et al., 1997; Takano & Osaka, 1999) unless (a) concrete scenarios are used (Peng et al., 1997), (b) the reference group is clearly specified (Heine et al., 2001), (c) comparisons are made between different ethnic groups within the same country (thereby increasing the likelihood that people will use the same point of reference; Heine et al., 2001), or (d) responses are compared across two different experimental conditions (such as the importance and accuracy ratings of the RAT from Studies 1 and 2).

The problem of reference groups has been noted for cross-cultural comparisons of values (Peng et al., 1997) and traits (Heine et al., 2001). It is also a problem of theoretical significance for lay theories, such as the items in the ITM. For example, the first item of the ITM reads, "The kind of person someone is is something very basic about them and it can't be changed very much." One's response to the words "changed very much" is influenced by how much change is perceived to be noteworthy. If the common lay theory among those around an individual is that people do not change much (e.g., 20% change is to be expected), then the individual's own belief that a person can change 30% may indeed seem like very much change in comparison with the low expectations of others. In contrast, the same 30% change in absolute terms does not seem like much change if the common lay theory among those around

an individual is that people change a great deal (e.g., 40%). To the extent that Japanese beliefs about how much change is to be expected are greater than those of Americans (which follows if Japanese endorse incremental self theories more than do Americans), their use of the subjective Likert response options will begin and end at a higher range than will Americans' use. Individuals thus can project different meanings onto the individual points of the Likert scale, thereby confounding the cross-cultural comparisons. It is important to note that such differences in the meaning of the Likert responses do not affect the cultural differences randomly but specifically reduce the magnitude of the effect across cultures (see Biernat & Manis, 1994; Heine et al., 2001, for more discussion on this point).

Peng et al. (1997) were the first to note the problems of reference groups in cross-cultural comparisons and found that greater validity could be achieved by using more objective measures—in particular, by asking participants to respond to concrete behavioral scenarios. In general, the reference-group effect is mitigated when participants answer items without invoking social comparison processes. For Study 4, we constructed an exploratory scale that relies on concrete scenarios and items involving a choice between two responses within the item, thereby reducing the tendency for participants to seek external referents with which to compare themselves.

Method

Participants. The American sample consisted of psychology majors and students in a social psychology class at the University of Pennsylvania who were invited to visit a Website to participate in the study. As an incentive for participation, a lottery was held, and 1 participant received a check for \$200. A total of 85 students participated. As the sample was diverse with respect to ethnic background, we segregated the sample into those of European descent ($n = 58$; 49 women and 9 men) and those of East Asian descent ($n = 14$; 11 women and 3 men). Thirteen other participants were from a variety of other backgrounds and were not included in the analyses.

The Japanese sample was collected from two introductory psychology classes at Kyoto University. A total of 83 people (16 women and 67 men) participated in the study. All Japanese participants were born and raised in Japan.

Materials. We created a total of 12 scenario questions to address beliefs in the incremental nature of abilities. These scenarios described performance in various courses at school, athletic ability, piano playing ability, teaching ability, sales ability, computer programming ability, and general intelligence. We also included the three-item ITM as a validity check (this time on a 9-point Likert scale ranging from 1 = *strongly disagree* to 9 = *strongly agree*) and some demographic items. The items were initially created in English and were translated into Japanese using the same procedure as in the previous studies. We emphasize that this scale should be viewed as exploratory, as both initial psychometric and cross-cultural analyses were conducted on the same relatively small samples, and we did not investigate the scale's discriminant validity or its correlations with other relevant measures.

Results and Discussion

Comparability of the samples. The samples differed considerably in their sex proportions, $\chi^2(2, N = 155) = 63.50, p < .001$. Sex differences were explored in all analyses, and the one significant effect is reported below. The two American samples ($M_s = 20.6$ and 20.1 for European Americans and Asian Ameri-

cans, respectively) were significantly older than the Japanese sample ($M = 18.6$, $F(2, 151) = 106.70$, $p < .001$). However, age did not correlate with any of the dependent variables within any of the samples.

Item analysis. All items were first coded in the direction of the belief that abilities are incremental and then standardized across the entire sample to translate them into a common metric. Reliability analyses were conducted; however, it is not surprising that Cronbach's alpha was rather low ($\alpha = .60$) for a 12-item scale, given the exploratory nature of these items. We then eliminated all items that had an item-total correlation of less than .20, which resulted in a 6-item Beliefs in Incremental Abilities (BIA) Scale that had a Cronbach's alpha of .68. This degree of consistency, although modest, is reasonable given the small number of items,

the wide array of domains of life sampled, and the diverse question formats used in the scale. A principal-components factor analysis was conducted on the 6-item scale, and a single factor emerged, which accounted for 42% of the variance. An examination of the items and the factor loadings suggests that the factor directly tapped into participants' beliefs in the incremental nature of abilities (see Table 3). We created a total factor score for each participant by summing the product of each standardized score and its corresponding factor loading.

Validity check. Participants' total factor score on the exploratory BIA Scale was correlated with their total score on the three-item ITM ($r = .34$, $p < .001$). Hence, there was significant overlap between beliefs in the incremental nature of abilities and incremental theories of personality, indicating that this measure

Table 3

Beliefs in Incremental Abilities Scale: Final Items, Factor Loadings, and Standardized Means for Each Culture

Item	Factor loading	Euro Amer ($n = 58$)	Asian Amer ($n = 14$)	Japan ($n = 83$)
What percent of intelligence is due to natural ability and what percent is due to effort? (Two percentages must sum to 100%) Coded as effort rating.	.800	-.44***	-.07	.32***
Imagine that Michelle, a sophomore, scored the highest grade in her history class. Only knowing this about Michelle, please do your best to estimate what percent of her performance in the class was due to her natural-born ability and how much was due to her effort and studying. (Two percentages must sum to 100%) Coded as effort rating.	.785	-.41***	-.06	.30***
Scott is a high school student and a good piano player. The best piano player at school had been chosen by the music teacher to play at the school graduation, but she had broken her hand and needed to be replaced. The teacher selected Scott to take her place. How much of Scott's piano playing talent is due to his natural abilities, and how much is due to his hard work? (Two percentages must sum to 100%). Coded as hard work rating.	.779	-.37***	.04	.25***
Alex has always gotten grades in his junior high math class that are well below the class average. The class average is 70% whereas Alex consistently scores around 50%. In his other classes, however, he tends to score at around the class average. In high school he decides that he is going to start working much harder on his math, and he now puts in twice as many hours as before into his math studies. The class average of his math class in his graduating year is also 70%. What do you think Alex's score will be in math in his graduating year if he continues to work as hard as he plans? Coded as estimate minus 50%.	.514	-.08	.14	.03
George joined a large software company 6 years ago as a computer programmer. He was so successful in his job that he was just promoted to Chief Programmer of his section. He is one of the youngest programmers to receive this promotion in his company. Please evaluate on 1-9 scales how much you feel George is a programming genius and how hard you think he works. Coded as hard work minus genius.	.458	.20*	.22	-.18*
Jessica is a sophomore on the varsity tennis team at school. She is currently ranked second out of the 10 sophomores on the team. She was needing some extra money so she took on a part-time job in the second term. Because of the job, she only could spend half as much time as before practicing her tennis. The other players will continue to work as hard as they had before. What do you expect her ranking will be at the end of the term? Coded as ranking minus 2.	.315	.04	.08	-.04
Total factor scale		-.91**	.13	.64**
Implicit Theory Measure				
M		4.39	4.97	4.86
SD		1.62	2.33	1.89

Note. All items are coded and standardized such that a more positive score reflects a greater belief in the utility of effort. Significance levels represent the degree to which European Americans and Japanese are different across cultures. Euro = European; Amer = American; Japan = Japanese.

* $p < .05$. ** $p < .01$. *** $p < .001$.

tapped into the same construct investigated by Dweck and colleagues (e.g., Chiu et al., 1997; Hong et al., 1999).

Cross-cultural comparisons. We compared European Americans and Japanese on each of the six items in the exploratory BIA Scale, the total factor score, and the ITM. Because of the small size of the Asian American sample, we did not include this sample in the ANOVAs, although we report their means in Table 3.

An analysis of the total factor scale revealed a highly significant effect for culture, $F(1, 138) = 14.32, p < .001$. As predicted, Japanese indicated they believed that abilities were more incremental than European Americans indicated they did.⁴ Parallel cultural differences were observed for the three highest loading items. An examination of the raw scores on the highest loading item, the role of effort in intelligence, is telling. European Americans viewed effort as accounting for 36% of intelligence, Asian Americans viewed it as accounting for 45%, and Japanese viewed it as accounting for 55%. The means of the Asian Americans tended to fall between those of European Americans and Japanese, at least for the highest loading items. This provides further support that in comparison with North American cultural experiences, East Asian cultural experiences more strongly reinforce the belief that abilities are incremental.⁵ A significant cultural reversal emerged for the computer programmer item. The relatively low factor loading of this item suggests that it tapped into something different than the first 3 items of the scale tapped.

Comparisons of the means of the ITM again did not reveal any cultural differences, $F(1, 138) = 2.36, p > .10$. The fact that cross-cultural comparisons of mean totals of the ITM failed to identify cultural differences in Studies 2–4, whereas cultural differences were found in (a) the experimental instructions manipulation in Study 3, (b) the exploratory BIA scenario scale in Study 4, and (c) the variety of past studies investigating the malleability of the self with East Asians reviewed above, increases our confidence that subjective Likert-type scales often yield misleading results in cross-cultural comparisons of means. Although such scales appear valid for use within cultures where people share a similar point of reference (e.g., Chiu et al., 1997; Hong et al., 1999), comparisons of means are confounded when they are compared between people who hold different reference groups. We suggest that one solution for reducing this reference-group problem is to use concrete scenarios with multiple answers within each question (cf. Biernat & Manis, 1994; Heine et al., 2001; Peng et al., 1997).

General Discussion

The present studies provide direct empirical evidence for self-improvement motivations among Japanese. Japanese are not simply more sensitive than North Americans in detecting negative self-relevant information (as revealed in the array of cross-cultural studies of self-esteem, self-enhancement, self-evaluation maintenance, and self-discrepancies; see Heine et al., 1999, for a review); they respond to this information differently as well. Indeed, the previously detected self-critical tendencies that are commonly found among Japanese appear to serve an important function: They enable Japanese to perform at their best. Self-criticism focuses one's awareness on areas of weakness, thereby spotlighting the places where self-improving efforts are needed. In two studies Japanese consistently worked harder after failure than they did

after success. Certain kinds of failure can serve as a motivating force for Japanese.

The Canadian and American samples responded to information indicating their weaknesses in a pattern diametrically opposite to that observed with the Japanese. When confronted with failure, North Americans, on average, persisted on the tasks less than when they had succeeded. This pattern is consistent with much past research (Baumeister et al., 1985; Feather, 1966, 1968, 1969; Frankel & Snyder, 1978; Pyszczynski & Greenberg, 1983; Shrauger & Rosenberg, 1970) and the predictions of self-enhancement theory. North Americans tend to be sensitive to information indicating their strengths, and they pursue activities that enable them to further affirm their positive characteristics. Continuing to work on a task in which one has previously succeeded will likely be met with more success, whereas working on a task in which one has previously failed has a lower likelihood of success. North Americans are better able to maintain a positive self-image by avoiding tasks that stand to reveal the chinks in their self-protective armor.

In sum, these results suggest that the two cultures share similar goals in wanting to do their best; however, they use different strategies in service of these goals. Japanese work harder when focusing on their shortcomings (self-criticism), whereas North Americans work harder when focusing on their strengths (self-enhancement).

Cultural differences in psychological processes always beg the question of why these differences exist. Study 3 provides one answer to that question with regard to the cultural differences in persistence: Japanese viewed performance on the RAT to be due to incremental abilities more than did Americans, thus rendering their persistence in the face of failure a more sensible strategy. Americans appeared to view the RAT more as a test of relatively fixed abilities, thus suggesting that continued persistence in the face of failure would be met with more failure and a threat to self-esteem. How this cultural difference in beliefs in the incremental nature of abilities came to be is also an important question, and we suggest that it is due to Japanese finding themselves in situations in which efforts are rewarded more often than do North Americans. For example, performance on Japanese university entrance exams is greatly enhanced by attending cram schools for several years, as these tests require mastery of much detailed factual knowledge (Rohlen, 1983)—for example, "Describe the events that led to the Franco-Prussian War," or "Describe the differences between mi-

⁴ The cultural difference is still significant if all 12 of the original scenario items are included, $F(1, 137) = 9.54, p < .003$. The 6 items that were eliminated from the scale still tended to favor our hypotheses (Japanese scored nominally higher than European Americans on 5 out of 6 of them); however, their very low item-total correlations suggest that they do not consistently tap into the construct of interest. Moreover, if all 12 items are retained, a factor analysis reveals a two-factor solution (the factors account for 22% and 13% of the variance, respectively) that is not readily interpretable, and the total score of the 12-item scale does not correlate as highly with the ITM as does the 6-item scale (for the 12-item scale, $r = .28$, for the 6-item scale, $r = .34$). This demonstrates that the 6 items form a better measure of beliefs in incremental abilities.

⁵ A significant sex difference emerged for the piano item, indicating that men ($M = 0.15$) were more likely to see piano success as being due to effort than were women ($M = -0.30$), $F(1, 137) = 4.27, p < .05$.

tosis and meiosis." In contrast, performance on North American university entrance exams is not greatly enhanced by years of studying (although preparatory schools such as Kaplan promise higher Scholastic Assessment Test and Graduate Record Examination scores, largely on the basis of teaching test-taking skills), as these tests are believed to tap into basic skills and aptitudes that tend to be viewed as less amenable to efforts. Widely shared lay theories regarding the incremental nature of abilities are one factor that can help explain why universities in these two cultures came to choose their respective entrance examination systems. Likewise, the participation in these divergent cultural worlds with these particular university examination systems is one factor that can help explain why Japanese and North American individuals come to possess their respective lay theories regarding the incremental or fixed nature of abilities. This concrete example helps to illustrate the mantra of cultural psychology: Culture and psyche make each other up (Shweder, 1990).

Cultural comparisons of mean scores on attitude and personality measures are often compromised by reference-group effects (Heine et al., 2001; Peng et al., 1997; cf. Biernat & Manis, 1994). This is a pernicious problem in many cross-cultural comparisons that cannot be corrected by any kind of statistical intervention. Different reference groups result in subjective Likert scale responses having divergent semantic meanings across cultures, thereby confounding comparisons between them.

It is important to note that unlike most cross-cultural studies, Studies 1–3 used a hidden behavioral measure as the key dependent variable. Past questionnaire studies that have found self-critical tendencies among Japanese have been challenged by the possibility that participants were disguising their true feelings in their responses. In the present studies, unbeknownst to them, the experimenter observed the participants through a hidden camera while they were alone in a room and timed their persistence. The participants knew that the experimenter had not seen how they had done on the first task, and they were told that the second task was not part of the experiment. It is not plausible that the self-improving tendencies exhibited here by Japanese participants were driven by self-presentation motives; there was no one to whom they could present themselves.

The pattern of participants' persistence was paralleled by their responses to the questionnaire measures. There was a highly pronounced Culture \times Condition interaction not only with respect to persistence but also with respect to participants' beliefs in the diagnosticity of the test and their views on the importance of the task. This convergence of implicit and explicit measures has also been observed in other recent cross-cultural studies regarding self-evaluation (Heine & Lehman, 1997b; Heine et al., 2000). It increases our confidence that explicit measures have not been yielding a false picture of cultural differences between Japanese and North Americans with respect to self-evaluations.

We realize that our choice of labeling the motivation observed among Japanese *self-improvement* may suggest some superficial similarities to North Americans' concerns with improving themselves. Clearly, a drive to improve one's standing is not foreign to North Americans. After all, the quintessential American dream is the belief that anyone has the potential to go from rags to riches. Motivational speakers pack auditoriums in the United States reminding people that they too can accomplish great things. Indeed, self-improvement of this sort may be characterized as an American preoccupation. Despite

our use of the same label, self-improvement, to refer both to Japanese increased efforts following failure and to the motivation underlying the American dream, we maintain that these two processes are distinct. What we refer to as Japanese self-improvement is an emphasis on discovering shortcomings and correcting them. This is an emphasis on process rather than on product. By continually aspiring to adjust oneself to better match the consensual ideals of performance, Japanese are able to symbolically deepen their sense of connection to the social unit from which the standards are derived. In contrast, the self-improvement that we observe generally in the North American case seems to be more of an emphasis on trying to actualize successful potentials. It is more of an emphasis on product—the great things that an individual ultimately can accomplish, or the great person that one can become through hard work and determination. It is, in the words of the U.S. Army, a drive to "be all that you can be." We believe this North American motivation is better captured by the term *self-advancement*. The results from the present studies underscore this important distinction.

Heightened efforts following failure do not imply that self-efficacy is unimportant for Japanese. That Japanese view abilities largely as a function of their efforts (Holloway, 1988; Stevenson & Stigler, 1992) suggests that failure is not particularly threatening to their perceived efficacy, nor does success necessarily heighten it. If success hinges on how hard one tries, then making persistent efforts in the face of failure may lead one to feel highly efficacious. The observed cultural differences suggest that self-efficacy manifests itself differently depending on one's view of self (cf. Oettingen, 1995).

The interpretation and generalizability of the present findings are constrained by a number of limitations. One of these is that the first 2 studies did not include a control group. Strictly speaking, we are unable to know whether self-improving motivations for Japanese are more sparked by transgressing a standard than they are shut off by attaining that standard. We can say, however, that self-improving motivations are more evident in situations in which Japanese identify a shortcoming in their performance. It is also important to note that all of our experimental studies operationalized self-improvement in terms of time spent persisting on the RAT. It might very well be the case that Japanese do not persist longer in the face of failure than do North Americans on some other kinds of tasks. We suspect that if the task was one in which effort and performance are more obviously correlated, the cultural differences would be attenuated. Last, all of the participants in these studies were students. Although we found similar effects in the Japanese sample among those from an elite and an average university, it is possible that people who participate in Japan's university entrance exam system are more attuned to the relation between effort and achievement than are those who do not. Results from nonstudent populations would certainly be informative.

One alternative account to these findings warrants discussion. That Japanese worked harder after failure than after success is consistent with a motivation to avoid "sticking out." When Japanese fall short of others' performance, they work harder than when they are leading the pack. This tendency is nicely captured in a word that is sometimes used to characterize a Japanese style of competition: *yokonarabi* (Kumon, 1982). *Yokonarabi* literally means to line up sideways, reflecting the belief that it is more important to keep up with the competition than to break ahead of

it. This kind of competition has some interesting parallels to Higgins and colleagues' (e.g., Higgins, 1996; cf. Lee, Aaker, & Gardner, 2000) conception of prevention motivation. When Japanese individuals are behind, their best chance to fit in is to increase their efforts, whereas when they are ahead, efforts to do more may be met with relatively fewer rewards than the case may be for North Americans. We view this motivation to avoid sticking out as importantly related to self-improvement. Fulfilling role obligations requires more attention to meeting a minimum standard than to surpassing the standard (Su et al., 1999; Young, 1981). This is another way to characterize the psychological mechanisms that emerge from participation in Japanese cultural practices.

Study 3 suggests one possible way to reduce cultural differences in persistence: leading North Americans to be more self-improving and Japanese to be more self-enhancing. For example, leading North Americans to view abilities as more incremental may enhance performance in the face of failure. To the extent that such techniques are successful, those who strive to motivate people to perform at their best (e.g., managers, educators) may be able to choose to foster self-improving or self-enhancing motivations depending on the kind of situation in which these motivations are most likely to lead to success.

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