

Is it Always Good to Provide Positive Feedback to Students? The Moderating Effects of
Culture and Regulatory Focus

Tse-Mei Shu^a

The Chinese University of Hong Kong

Shui-fong Lam^b

The University of Hong Kong

Author Note

^aDepartment of Psychology, the Chinese University of Hong Kong, Shatin, Hong Kong;
Email: annieshu@cuhk.edu.hk

^bDepartment of Psychology, the University of Hong Kong, Pokfulam Road, Hong Kong;
Email: lamsf@hku.hk

^aCorrespondence concerning this article should be addressed to T-M. Shu, Department of Psychology, the Chinese University of Hong Kong, Shatin, Hong Kong.
Email: annieshu@cuhk.edu.hk; Tel: (852) 3943-1183; Fax: (852) 2603-5019

Abstract

To extend the previous research findings by Heine et al. (2001) and Idson and Higgins (2000) to educational setting, two experimental studies were conducted to examine the moderating role of culture (Study 1) and regulatory focus (Study 2) on the motivational consequences of success and failure feedback. College students (N = 111 for Study 1 and N = 93 for Study 2) received alleged feedback on their performance of a novel task. Results across the two studies replicated the previous findings and showed that success was motivating to students from the Western culture and students with promotion focus whereas failure feedback was motivating to students from the Eastern culture and students with prevention focus. The current studies provide empirical evidence for the replicability of previous research findings in the educational context. They also point to the future directions for the investigation of self-view and motivation.

Keywords: feedback; regulatory focus; culture; motivation; self-view

1. Introduction

“Your chances of success in any undertaking can always be measured by your belief in yourself.”

Robert Collier

Words from the American writer Robert Collier remind us of the conventional wisdom that maintaining a positive self-view is the key to success. This notion is supported by many studies (e.g., Bandura, 1982; Seligman, 1995; Taylor & Brown, 1988). In educational setting, research findings indicate that positive self-view is associated with many desirable outcomes, such as higher persistence in the face of failure (Heine et al., 2001), higher motivation (Peetsma, Hascher, Van, & Roede, 2005) and better performance (Cambra-Fierro & Cambra-Berdun, 2007; Jones, Audley-Piotrowski, & Kiefer, 2012). The motivational benefits of viewing oneself favorably are believed by laymen as well as researchers.

However, the benefits of positive self-view are more complicated than expected. For example, a longitudinal study by Robins and Beer (2001) showed that college students' positive self-view predicted their school disengagement but not their academic performance nor graduation rate. College students with an inaccurate positive self-view also engaged in more self-handicapping behaviors (Kim et al., 2010). Gresham, Lane, MacMillan, Bocian, and Ward (2000) reported that third graders with excessive positive self-view reported lower academic competence and motivation. Conversely, some studies on upward social comparison indicated that individuals with negative self-view may exhibit positive consequences on motivation (Blanton, Buunk, Gibbons, & Kuyper, 1999; Marx & Roman, 2002). Taken together, these studies reveal inconsistent findings about positive and negative self-views. Studying the circumstances under which positive or negative self-view is motivating or demotivating is important because it may resolve the inconsistencies and provide useful implications to educational practices. As general self-view might be dynamic and elusive, self-view elicited by specific academic situations, such as unanticipated successes or

unavoidable failures, is more feasible for study with experimental manipulation. Thus, the current studies took a step backward by investigating the self-view arising from success or failure feedback and the effects of feedback on motivation.

Although motivation after success or failure is well documented in the literature of social psychology (e.g., Heine et al., 2001; Idson & Higgins, 2000; Van-Dijk & Kluger, 2004), it is less validated in the educational context. Given the need for generalizability and the recent call for replication of previous research findings (e.g., Lindsay, 2015), the current studies are timely endeavors. By studying the moderating effects of culture and regulatory focus, the current studies attempted to replicate the findings of Heine et al. (2001) and Idson and Higgins (2000), respectively.

1.1. Culture and Motivation

In Western culture, where independent self-construal is emphasized (Markus & Kitayama, 1991), individuals are more attentive to positive information, such as positive features of the self (Heine, Lehman, Markus, & Kitayama, 1999) or success outcomes. In Hamamura, Meijer, Heine, Kamaya, and Hori's (2009) study, American participants were more sensitive to approach-related information and had a better memory for the positive information. Similarly, when American participants were asked to imagine the situation that they did not win a game (a success-forgone situation) or that they did not lose the game (a failure-avoidance situation), they perceived the success-forgone situation as more important (Lee, Aaker, & Gardner, 2000). In Heine et al.'s (2001) study, the American participants were found to be more persistent on a novel task after success feedback.

In Eastern culture, where social acceptance and the interdependent self-construal are emphasized (Markus & Kitayama, 1991), individuals are more attentive to negative information or failure outcomes. The Japanese participants in Hamamura et al.'s (2009) study were found to be more sensitive to avoidance-related information and had a better memory for

the negative information. The Chinese participants in Lee et al.'s (2000) study perceived the “not losing” situation (failure-avoidance situation) as more important than the “not winning” situation (success-forgone situation). In educational setting, students from Eastern culture tended to be more likely to pursue avoidance goal (Elliot, Chirkov, Kim, & Sheldon, 2001), and their performance in a novel task were better explained by fear of failure (Eaton & Dembo, 1997). Similarly, Heine et al. (2001) found that their Japanese participants were more persistent after failure feedback and also viewed the failure feedback as more important and diagnostic to their performance.

Taken together, individuals from Western and Eastern cultures seem to react differently to the positive and negative information. If they are given positive and negative feedback in academic setting, what would be their self-view and the subsequent motivational reaction? Study 1 adopted a similar paradigm of Heine et al. (2001) and extended the dependent measures by including performance and persistence. The measure of self-view was also included to indicate the impact of success or failure feedback. It was expected that students from the Western culture are more motivated after success feedback whereas those from the Eastern culture are more motivated after failure feedback.

1.2. Regulatory Focus, Culture and Motivation

Another moderator that may explain the relation between feedback and motivation is regulatory focus, a personality variable. The regulatory focus theory postulates two independent regulatory focus, namely the promotion focus and the prevention focus (Higgins, 1998). Driven by the attainment of achievements, accomplishments and the pursuit of the ideal-self, individuals with promotion focus are oriented to fulfill their hopes, wishes, and aspirations. They are concerned with maximizing their positive outcomes with the approach-oriented strategies, such as risk taking and eager advancement (Shu & Lam, 2011). By contrast, individuals with prevention focus are oriented to meet their duties, obligations, and

responsibilities. Their behaviors are primarily guided by the pursuit of the ought-self and the avoidance of losses and failures. They are concerned with minimizing the negative outcomes with the avoidance-oriented strategies, such as vigilant stand and prudent move (Shu & Lam, 2011).

The differential characteristics of the promotion and prevention focuses imply that individuals with different regulatory focus react differently to positive and negative outcomes. For example, individuals with promotion focus were more motivated after success (Idson & Higgins, 2000; Shu & Lam, 2011; Van-Dijk & Kluger, 2004) and more inspired by positive role models (Lockwood, Jordon, & Kunda, 2002). Individuals with prevention focus were more motivated after failure and more inspired by negative role models. Interestingly, most of these individual differences resemble to the cross-cultural differences between individuals from Western and Eastern cultures (Higgins & Spiegel, 2004). Indeed, Lee et al. (2000) found that individuals from Western culture emphasize more on promotion-framed information, whereas individuals from Eastern culture emphasize more on prevention-framed information. Despite these empirical evidences, there are few studies investigating the moderating effects of both regulatory focus and culture in the same research program. The current research might be one of the first few research programs that investigate cultural and individual moderators with the same experimental paradigm and same set of dependent measures. As an attempt to replicate Idson and Higgins's (2000) study, Study 2 investigated whether success feedback would be motivating to students with promotion focus while failure feedback would be motivating to those with prevention focus.

2. Study 1

2.1. Design and Participants

A 2 (feedback: success vs. failure) \times 2 (culture: Western vs. Eastern) experimental design was adopted.

One hundred and eleven participants (61 female and 50 male) were recruited, in which 56 Chinese college students joined this study for course credits whereas 55 North American college students joined for a token of US\$10. The Eastern sample were all Chinese and has resided locally for an average of 19.98 years whereas majority from the Western sample were North American and had stayed locally for an average of 3 months. One student from the Western sample was excluded as he was suspicious about the experimental procedure. Another student from the Eastern sample was excluded because the manipulation was not successful. The final sample included 109 participants (60 female and 49 male; $M_{age} = 20.67$). No gender difference was found in the results reported below. For Studies 1 and 2, the number of participants and descriptive statistics for each dependent variable in each condition are summarized in Table 1.

2.2. Procedures

Upon consent, participants were told that they would participate in a study of visual search ability. This ability was said to be the foundation of perceptual coordination, indicative of human visual sensitivity and also moderately correlated with academic performance and many cognitive tests. Participants were told that performing well in the visual search test did not only show that they were highly observant but also had rapid recognition ability. The alleged purpose of this study was to collect data from college students on their performance in the Visual Search Test.

Participants had to complete the tests in two sections. In the first section, they completed the first test in 5 min (baseline performance) and then completed a page of questionnaire about their perception of the importance of the visual search ability.¹ The experimenter graded the test while participants were finishing the questionnaire. Participants received a feedback result slip and had to reflect on the reasons for their performance. This was served as the manipulation check of feedback. Afterwards, participants were told that

they could complete the second test without time limit as this test was to investigate their improvement under no time constrain. In fact, the time they spent on this task was recorded. Lastly they were fully debriefed.

2.3. Materials

Two versions of the Visual Search Tests were developed. Each was made up of a 20 by 25 matrix of symbols. A sequence of seven symbols, which appears more than once and in any direction of the matrix, e.g., from top to bottom (or reverse), left to right (or reverse) and along the diagonal, was the searching target. Participants searched for this specific sequence as fast and as many as they could. The two versions have been counterbalanced and included in the two sections of this study. Fifty-nine participants completed one version first whereas 50 participants completed the other version first.

2.4. Manipulation of Feedback

A feedback result slip was given to the participants after the first test. Participants were informed of the number of their correct answers and the percentile ranking of their performance (in text and a chart) according to the norm of their fellow students. In the success feedback condition, participants were informed that the percentile ranking was *better than* 70% of their fellow students, whereas in the failure feedback condition, participants were informed that their performance was *worse than* 60% of their fellow students.² Then they had to reflect on and write down three personal reasons why they received the performance.

A coding scheme was developed to classify the reasons into positive and negative self-views. Positive self-view is a reflection on personal merits or strengths like “being attentive,” “having good recognition ability,” “having good orientation ability,” “being patient”, “being confident” and was assigned a positive score. Negative self-view is a reflection on personal shortcomings or limitations like “being inattentive,” “having poor memory,” “being lack of patience,” “being careless”, “having self-doubt” and was assigned a negative score.

Participants' scores on the three responses were aggregated and were in the range of -3 to +3. Only the participants with aggregated scores with a positive sign were included in the success feedback condition or participants with aggregated scores with a negative sign were included in the failure feedback condition. Two independent coders rated the items and reached a reliability of 0.96.

2.5. Results

2.5.1. Manipulation check on feedback. Only one participant described reasons that were inconsistent to the assigned condition and was excluded from the sample. The final sample included 50 participants in the success feedback condition and 59 participants in the failure feedback condition. Result of an independent *t*-test revealed that participants in the success feedback condition ($M = 2.56, SD = 0.69$) generated more positive self-view than their counterparts in the failure feedback condition ($M = -2.22, SD = 0.98$), $t(103.56) = 29.69$, $p < .01$. The manipulation was deemed successful.

2.5.2. Difficulty of the two visual search tests. An independent *t*-test was conducted on the number of correct sequences identified by the participants in the two versions. A significant difference was found, $t(107) = -3.59, p = .001$, indicating that participants found significantly fewer sequences in one version ($M = 17.29, SD = 5.69$) than the other ($M = 21.12, SD = 5.4$). Test order was thus included in the subsequent analysis on performance.

2.5.3. Persistence. A 2 (culture) \times 2 (feedback) \times 2 (test order) ANOVA was conducted on the time participants spent on the second test. A significant culture \times feedback 2-way interaction was found when test order was included in the model, $F(1, 101) = 6.76, p = .011$, partial $\eta^2 = .063$. Subsequent contrasts showed that after failure feedback, students from the Eastern culture ($M = 772, SD = 147.14$) were significantly more persistent than their Western counterparts ($M = 646.48, SD = 160.79$), $F(1, 101) = 10.09, p = .002$. After success feedback, students from Western culture ($M = 781.52, SD = 218.92$) did not persist longer

than their Eastern counterparts ($M = 739.32$, $SD = 123.45$), $F(1, 105) = 1.07$, $p = .3$. However, students from Western culture were indeed more persistent after success than failure feedback, $F(1, 101) = 10.95$, $p = .001$.

2.5.4. Performance. Controlling for baseline performance, a 2 (culture) \times 2 (feedback) \times 2 (test order) ANCOVA was conducted. A significant culture \times feedback 2-way interaction was also found when test order was included in the model, $F(1, 100) = 12.8$, $p = .001$, partial $\eta^2 = .113$. Subsequent contrasts showed that after success feedback, students from Western culture ($M = 41.79$, $SE = .98$) significantly performed better than their Eastern counterparts ($M = 37.69$, $SE = .98$), $F(1, 100) = 8.82$, $p = .004$. Conversely, students from Eastern culture ($M = 41.15$, $SE = .90$) performed significantly better than their Western counterparts ($M = 38.52$, $SE = .91$) after failure feedback, $F(1, 100) = 4.24$, $p = .04$. A within-culture difference was found in both cultural groups: students from Eastern culture performed significantly better after failure than success feedback, $F(1, 100) = 6.79$, $p = .01$, whereas students from Western culture performed significantly better after success than failure feedback, $F(1, 100) = 6.03$, $p = .02$. In short, results supported the hypotheses that success feedback was motivating to students from Western culture but failure feedback was motivating to students from Eastern culture.

2.6. Discussion

The findings replicated Heine et al.'s (2001) study in the educational context and showed that students from different cultures responded differently to the positive and negative feedback on their performance in a novel task. Study 1 also extended Heine et al.'s findings in two aspects. First, Chinese ethnic group displayed the same pattern of findings as those of the Japanese participants in Heine et al.'s study. Second, Study 1 showed the moderating role of culture in the effects of feedback on task performance as well as task persistence. Both were actual behaviors instead of self-report measures and might provide stronger implications to

the real-world setting. As the visual search test was a novel task and students did not know the exact number of solutions in the matrix, what drove them to stop searching would be their motivation more than their prior ability level. However, one may argue that it might be a contrived measure in laboratory setting. To overcome this limitation in external validity, Study 2 included an additional dependent measure to capture motivation in a more authentic setting.

3. Study 2

3.1. Design and Participants

A 2 (feedback: success vs. failure) \times 2 (regulatory focus: promotion focus vs. prevention focus) experimental design was adopted. Participants' regulatory focus was temporarily primed and their willingness to make extra effort after the laboratory session was a new additional measure.

Ninety-eight (68 female and 30 male) college students participated in this study for course credits. Five participants were excluded from the sample as the manipulation did not work for them. The final sample consisted of 93 participants (63 female and 30 male; $M_{age} = 19.1$). Only Chinese participants were recruited as culture is associated with regulatory focus (Lee et al., 2000) and may be confounding. No gender difference was found in the results reported below.

3.2. Procedures

The experimental procedures were similar to those of Study 1, except that participants completed an additional test in between the original two visual search tests. Participants were informed that the purpose of the experiment was to find out factors that could enhance individuals' visual search ability¹. The additional test was in fact a passage priming participants' regulatory focus. After reading, they completed some questions and searched for ten words in the article that were related to the respective regulatory focus. Next, participants were told that their visual search ability might be improved by switching between top-down

and bottom-up processing and thus they could complete the last visual search test without time limit. At the end, they were given a flyer inviting them to a training workshop on improving their visual search ability. Participants indicated whether they were willing to join the workshop, their preferred timeslot and contact information. Lastly the participants were fully debriefed.

3.3. Materials

The two versions of the original visual search test were the same as those in Study 1. They have been counterbalanced and used in the first and the third tests of this experiment. Half of the participants ($n = 47$) completed one version first whereas another half ($n = 46$) completed another version first. The second visual search test was a new addition for priming participants' regulatory focus.

3.4. Priming of Regulatory Focus

The second visual search test was a journal article which advocated the goals and strategies that are related to either promotion focus or prevention focus. Wordings such as “attaining to success” and “eager to accept challenge” were included in the promotion focus condition whereas those such as “avoiding of failure” and “vigilant to avoid mistakes” were included in the prevention focus condition. Forty-five participants read an article advocating the promotion focus and 48 participants read the article advocating the prevention focus. To ascertain whether participants believed in the message offered by the article, they were asked to indicate their extent to which they agreed that the article was easy to understand and also the article had real life significance in two questions on a 7-point scale (from 1 = strongly disagree to 7 = strongly agree). The average score of these two items was used to indicate the credibility of the article.

3.5. Manipulation of Feedback

It was the same as Study 1. Participants were randomly assigned to the two conditions: success feedback ($n = 45$) and failure feedback conditions ($n = 48$). The coding by two raters on the items reached a reliability of 0.96.

3.6. Results

3.6.1. Credibility of the article. A one-sample t -test revealed a significant difference between the average score ($M = 5.48$, $SD = 0.79$) and the mid-point of the scale, $t(92) = 18.04$, $p < .001$. Participants' perception were not different across the four conditions, $F(1, 89) = 1.23$, $p = .27$. The manipulation of regulatory focus was deemed successful.

3.6.2. Manipulation check on feedback. Five participants from the failure feedback condition wrote reasons that were inconsistent to their assigned condition and they were excluded from the sample. As a result, 48 participants remained in the success feedback condition while 45 participants in the failure feedback condition. Result of an independent t -test found that participants in the success feedback condition ($M = 2.76$, $SD = 1.12$) generated more positive self-view than their counterparts in the failure feedback condition ($M = -2.04$; $SD = 0.54$), $t(68.51) = 26.49$, $p < .01$. The manipulation was deemed successful.

3.6.3. Difficulty of the two visual search tests. A significant difference was found between the number of correct sequences identified in the two versions, $t(91) = 2.69$, $p = .008$, indicating that participants found significantly fewer sequences in one version ($M = 17.3$, $SD = 6.95$) than the other ($M = 20.7$, $SD = 5.05$). Test order was included in the subsequent analyses.

3.6.4. Persistence. A 2 (regulatory focus) \times 2 (feedback) \times 2 (test order) ANOVA was conducted on the time participants spent on the last test. A significant 2-way interaction was found, $F(1, 85) = 5.53$, $p = .021$, partial $\eta^2 = .061$, when test order was included in the model. Subsequent contrasts showed that after failure feedback, students with prevention focus ($M = 778.23$, $SD = 209.74$) were significantly more persistent than their counterparts with

promotion focus ($M = 652.77$, $SD = 179.88$), $F(1, 85) = 4.7$, $p = .033$. However, students with promotion focus ($M = 741.13$, $SD = 232.43$) were not more persistent than their counterparts with prevention focus after success feedback ($M = 667.32$, $SD = 161.88$), $F(1, 85) = 1.37$, $p = .25$. These results partially supported the hypotheses that only failure feedback motivated the students with prevention focus to persist longer on a task.

3.6.5. Performance. Controlling for baseline performance, a 2 (regulatory focus) \times 2 (feedback) \times 2 (test order) ANCOVA was conducted. A significant regulatory focus \times feedback 2-way interaction was revealed when test order was included in the model, $F(1, 84) = 10.21$, $p = .002$, partial $\eta^2 = .11$. Subsequent contrasts showed that after failure feedback, students with prevention focus ($M = 41.64$, $SE = 1.1$) significantly performed better than their counterparts with promotion focus ($M = 37.53$, $SE = 1.2$), $F(1, 84) = 6.36$, $p = .014$. Conversely, students with promotion focus ($M = 41.49$, $SE = 1.18$) significantly performed better than their counterparts with prevention focus ($M = 38.01$, $SE = 1.2$), $F(1, 84) = 4.05$, $p = .047$ after success feedback.

3.6.6. Willingness to make extra effort. A 2 (regulatory focus) \times 2 (feedback) hierarchical logistic regression was conducted on the preferences that participants indicated to join the training workshop (yes or no). In Step One, main effects of the two variables were entered. In Step Two, the interaction term was entered. Results showed that there was a significant change between the two models, $\Delta\chi^2(1, N = 93) = 4.948$, $p = .026$, $\phi = .23$, indicating that adding the interaction term increased the model fit. Among the estimates, only the regression coefficient for the interaction term was significant, $\beta = 2.11$, Wald statistics = 2.65, $p = .03$. The other coefficients were not statistically significant ($ps > .05$). A higher proportion of participants with prevention focus indicated their willingness to join the workshop than their counterparts with promotion focus (33.3% vs. 14.8%) in the failure feedback condition. A higher proportion of participants with promotion focus indicated their

willingness than their counterparts with prevention focus (37% vs. 14.8%) in the success feedback condition. These findings are depicted in Figure 1. In short, results supported our hypotheses that success feedback was motivating to students with promotion focus whereas failure feedback was motivating to students with prevention focus.

3.7. Discussion

Although results on persistence only supported half of the hypotheses, those on the other two measures were consistent with the hypotheses: failure feedback is motivating to students with prevention focus whereas success feedback is motivating to those with promotion focus. To address the limitation of external validity in Study 1, Study 2 included workshop participation as an additional dependent measure. Participants who chose to join the one-hour workshop needed to provide their personal information and fit the schedule of the workshop to their own. They might have to sacrifice their leisure time to join the workshop after the experiment. These participants should have high authentic motivation to improve their visual search ability. This measure could increase the generalizability of the findings beyond the laboratory.

Study 2 showed that individuals' accessibility to different regulatory focus systems could be affected by temporary priming of these systems. This finding implies that regulatory focus is not simply an individual's chronic preference but also a state that is sensitive to the situational requirements or temporary activation. It is possible to temporarily induce an individual's regulatory focus (through training or education) to facilitate the motivational benefits of feedback. One may argue that the articles might have involved other related constructs, such as approach-avoidance goals and gains-loss aversion. However, Study 2 did not include manipulation checks to address this issue. Future studies may include measures of regulatory focus and these constructs to control for this possible confounding.

4. General Discussion

The current two studies aimed at investigating the inconsistencies of the motivational benefits of success and failure feedback by adopting the same experimental paradigm and same set of dependent measures. The findings, in line with the past studies (Heine et al., 2001; Idson & Higgins, 2000), showed that success and failure feedback and the subsequent positive and negative self-view could be both motivating and de-motivating. Their motivational effects depended on between-culture and within-culture factors.

4.1. Culture and Regulatory Focus as Moderators

The findings of Study 1 are in line with those of Heine et al.'s (2001) study in which their Japanese participants were more motivated after failure whereas their North American participants were more motivated after success. Why is such a cultural difference in the response to feedback? Heine et al. explained with the self-improving motivation in the individuals from Eastern culture and the self-enhancing motivation in the individuals from Western culture. The motivation of self-improvement may prompt individuals from Eastern culture to criticize and reflect on their own weaknesses and shortcomings. This notion is supported by an ancient quotation from a Chinese classical text, *Shangshu*: "conceit invites losses while modesty brings gains." By contrast, the motivation of self-enhancement may prompt individuals from Western culture to acknowledge their own strengths and evaluate themselves positively. The manipulation check of feedback in Study 1 may provide some hints to this speculation. Results of the check showed that students did generate more positive self-view after success than failure feedback. It implied that students' self-view differed after they have received success vs. failure feedback. Their motivational responses to feedback might indeed come from this difference. As the current studies did not directly manipulate self-view, these arguments are only speculative³. Yet, it may point to some future directions in the study of self-view (i.e., positive vs. negative self-relevant information) and motivation. To

unpack this cultural difference, more studies are needed to investigate the possible psychological mechanisms related to the differential responses to feedback.

The findings of Study 2 are intriguing as they are similar to those of Study 1. These results extend the previous findings on regulatory focus and motivation (e.g., Idson & Higgins, 2000; Van-Dijk & Kluger, 2004) to the educational setting and also increase the real-world significance of this phenomenon. Similar to Study 1, the results of manipulation check on feedback may provide some clues on the effect of self-view on motivation³.

4.2. Regulatory Focus as a Psychological Mechanism in the Cultural Differences

The current studies may have relevancy to the debate on the study of culture. Recently, some psychologists (e.g., Chiu & Hong, 2006) advocate that universal psychological mechanisms may be used to explain cultural variability. They argue that this endeavor may foster the understanding of cross-cultural phenomena and suggest investigating the chronic cultural differences from the perspective of “social psychology of culture” with a focus on studying the situational variation of behaviors within each individual culture. The current studies are responses to this advocacy. Studies 1 and 2, respectively, suggested a culturally-specific and a culturally-universal nature of the effect of feedback on motivation. Study 1 displays the chronic cultural differences while Study 2 displays the individual differences that differ prevalently across cultures. Within a culture, individuals’ behaviors vary according to the situations (success vs. failure feedback) and the state of their personality (promotion vs. prevention focus). With the perspective of “social psychology of culture,” the current studies have revealed the dynamic interplay between personality and cultural factors.

The current findings have also pointed to a phenomenon that cultural differences may resemble the individual differences within the same culture. It is reasonable to speculate that the individual variations found in Study 2 may account for the cultural differences in Study 1. For example, although individuals from the Eastern culture are generally more motivated after

failure feedback, those with prevention focus may receive higher motivational benefits from failure feedback than those with promotion focus. Similarly, individuals from the Western culture and with promotion focus may benefit more than those with prevention focus after success feedback. From this speculation, regulatory focus may be one of the specific psychological mechanisms mediating the cultural differences in the relations between feedback and motivation. However, this notion is only speculative because Study 1 did not measure the prevalence of the two regulatory focuses among the two cultural groups. Future studies may include a chronic measure of regulatory focus, such as the Regulatory Focus Questionnaire (Higgins et al., 2001) or Self-guide Congruencies Measures (Higgins, Shah, & Friedman, 1997), to investigate the psychological mechanism that can explain the cultural differences as shown in Study 1.

4.3. Social-Cognitive Constructs in the Motivational Science Perspective

The current studies have contributed to the literature of motivational science from three perspectives. In his seminal paper, Pintrich (2003) suggests that a scientific perspective on motivation should involve three themes: 1) research should involve the use of empirical evidence; 2) research should derive knowledge from multiple disciplines in terms of theories, constructs, and methods; and 3) the goals of research should reflect both scientific understanding and utility. The current studies are in line with all of these themes. First, the two experimental studies adopted standardized procedures and provided empirical support to the moderating roles of culture and regulatory focus on the motivational effects of feedback. Second, the current studies involved two social-cognitive constructs that are from different psychology domains, namely personality psychology and cultural psychology. Lastly, these two studies are controlled laboratory experiments with high ecological validity. For instance, the inclusion of workshop participation in Study 2 provided an authentic measure of student motivation in real-world setting. Taken together, the current studies have made an attempt to

study student motivation in the educational context from a scientific perspective.

5. Footnotes

¹To validate the participants' perception on the importance of the visual search ability, participants were asked how important they thought the visual search ability was in different aspects of daily life (e.g., map reading, shopping in mall, orientating in the wilderness, driving, searching people, and identifying differences in graphics) on a 6-point Likert scale (from 1 = not important to 6 = very important). Participants' ratings were compared to mid-point of the scale using one-sample *t*-tests. Both Studies 1 and 2 found that participants believed that this ability was important ($M = 4.6$, $SD = .67$ for Study 1; $M = 4.55$, $SD = .71$ for Study 2) in different aspects of daily life ($t(108) = 17.07$, $p < .001$ for Study 1; $t(92) = 14.33$, $p < .001$ for Study 2).

²To check whether the feedback would elicit failure/success experience, an independent study with 109 college students was conducted. Sixty-one participants were asked to indicate how much they agreed that it was a success and a failure experience if they performed better than 70% of their fellow students in a visual search test. Both responses were made on a 6-point scale from 1 (strongly disagree) to 6 (strongly agree). Forty-eight participants were asked the same two questions but were told that they performed worse than 60% of their fellow students. Compared to the latter group ($M = 2.19$, $SD = .76$), the former group ($M = 4.44$, $SD = 1.12$) felt more that performing better than 70% of their fellow students was a success experience, $t(105.03) = 12.49$, $p < .001$. Conversely, the latter group ($M = 4.4$, $SD = .96$) felt more than the former group ($M = 2.49$, $SD = 1.19$) that performing worse than 60% of their fellow students was a failure experience, $t(107) = 9$, $p < .001$. The results supported the believability of the valence of the feedback.

³To examine this speculation, the number of personal reasons generated by the students in the manipulation check of feedback was used as a continuous measure. We regressed the persistence and performance on this continuous measure (centered) and culture

(dummy-coded) for Study 1 and regulatory focus (dummy-coded) for Study 2. In Study 1, the regression analysis on persistence showed a marginally significant model, $\Delta R^2 = .03$, $F(1,105) = 3.05$, $p = .08$, whereas the regression model on performance was significant, $\Delta R^2 = .05$, $F(1,104) = 6.23$, $p = .014$. In Study 2, the regression analyses on persistence, $\Delta R^2 = .06$, $F(1,89) = 6.13$, $p = .02$, and performance, $\Delta R^2 = .08$, $F(1,88) = 11.42$, $p = .001$, also showed a significant model. For the dependent measure of workshop participation, the logistic regression showed that adding the interaction term to the model increased model fit, $\Delta\chi^2(1, N = 93) = 3.7$, $p = .06$. The regression coefficient for the interaction term was marginally significant, $\beta = -0.37$, Wald statistics = 3.45, $p = .06$, with $\exp \beta = 0.69$, and 95% C. I. for $\exp \beta$ is 0.47 and 1.02. These results suggested that positive or negative self-view could be interact with culture or regulatory focus in affecting students' motivation.

References

- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147. <http://dx.doi.org/10.1037/0003-066X.37.2.122>
- Blanton, H., Buunk, B. P., Gibbons, F. X., & Kuyper, H. (1999). When better-than-other compare upward: Choice of comparison and comparative evaluation as independent predictors of academic performance. *Journal of Personality and Social Psychology, 76*, 420-430. <http://dx.doi.org/10.1037/0022-3514.76.3.420>
- Cambra-Fierro, J., & Cambra-Berdún, J. (2007). Students' self-evaluation and reflection (part 2): An empirical study. *Education and Training, 49*, 103-111. <http://dx.doi.org/10.1108/00400910710739469>
- Chiu, C.-y., & Hong, Y.-y. (2006). *Social psychology of culture*. New York: Psychology Press.
- Eaton, M. J., & Dembo, M. H. (1997). Differences in the motivational beliefs of Asian American and non-Asian students. *Journal of Educational Psychology, 89*, 433-440. <http://dx.doi.org/10.1037/0022-0663.89.3.433>
- Elliot, A. J., Churkov, V. I., Kim, Y., & Sheldon, K. M. (2001). A cross-cultural analysis of avoidance (relative to approach) personal goals. *Psychological Science, 12*, 505-510. <http://dx.doi.org/10.1111/1467-9280.00393>
- Gresham, F. M., Lane, K. L., MacMillan, D. L. Bocian, K. M., & Ward, S. L. (2000). Effects of positive and negative illusory biases: Comparisons across social and academic self-concept domains. *Journal of School Psychology, 38*, 151-175. <http://dx.doi.org/10.1037/a0027299>
- Hamamura, T., Meijer, Z., Heine, S. J., Kamaya, K., & Hori, I. (2009). Approach--avoidance motivation and information processing: a cross-cultural analysis. *Personality and Social Psychology Bulletin, 35*, 454-462. <http://dx.doi.org/10.1177/0146167208329512>

- Heine, S. J., Kitayama, S., & Lehman, D. R., Takata, T., Ide E., Leung, C., & Matsumoto, H. (2001). Divergent consequences of success and failure in Japan and North America: An investigation of self-improving motivations and malleable selves. *Journal of Personality and Social Psychology, 81*, 599-615. <http://dx.doi.org/10.1037/0022-3514.81.4.599>
- Heine, S. J., Lehman, D. R., Markus, H. R., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review, 106*, 766-794. <http://dx.doi.org/10.1037/0033-295X.106.4.766>
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 1-46). [http://dx.doi.org/10.1016/S0065-2601\(08\)60381-0](http://dx.doi.org/10.1016/S0065-2601(08)60381-0)
- Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: promotion pride versus prevention pride. *European Journal of Social Personality, 31*, 3-23. <http://dx.doi.org/10.1002/ejsp.27>
- Higgins, E. T., & Spiegel, S. (2004). Promotion and prevention strategies for self-regulation: A motivated cognition perspective. In Saumeister, F. Y. & Vohs, K. D. (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 171-187). New York: Guilford Press. <http://dx.doi.org/10.1007/s10826-013-9847-6>
- Higgins, E. T., Shah, J., & Friedman, R. (1997). Emotional responses to goal attainment: Strength of regulatory focus as a moderator. *Journal of Personality and Social Psychology, 66*, 276-286. <http://dx.doi.org/10.1037/0022-3514.72.3.515>
- Idson, L. C., & Higgins, E. T. (2000). How current feedback and chronic effectiveness influence motivation: Everything to gain versus everything to lose. *European Journal of Social Psychology, 30*, 583-592. <http://dx.doi.org/10.1002/1099->

0992(200007/08)30:4<583::AID-EJSP9>3.0.CO;2-S

Jones, M. H., Audley-Piotrowski, S. R., & Kiefer, S. M. (2012). Relationships among adolescents' perceptions of friends' behaviors, academic self-concept, and math performance. *Journal of Educational Psychology, 104*, 19-31.

<http://dx.doi.org/10.1037/a0025596>

Kim, Y.-H., Chiu, C.-Y., & Zou, Z. (2010). Know thyself: Misperceptions of actual performance undermine achievement motivation, future performance, and subjective well-being. *Journal of Personality and Social Psychology, 99*, 395-409.

<http://dx.doi.org/10.1037/a0020555>

Lee, A. Y., Aaker, J. L., & Gardner, W. L. (2000). The pleasures and pains of distinct self construals: The role of interdependence in regulatory focus. *Journal of Personality and Social Psychology, 78*, 1122-1134. [http://dx.doi.org/10.1037//0022-](http://dx.doi.org/10.1037//0022-3514.78.6.1122)

[3514.78.6.1122](http://dx.doi.org/10.1037//0022-3514.78.6.1122)

Lindsay, D. S. (2015). Replication in psychological science. *Psychological Science*. Advanced online publication. <http://dx.doi.org/10.1177/0956797615616374>

Lockwood, P., Jordan, C. H., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology, 83*, 854-864. <http://dx.doi.org/10.1037//0022-3514.83.4.854>

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion and involvement. *Psychological Review, 98*, 224-253. [http://dx.doi.org/10.1037/0033-](http://dx.doi.org/10.1037/0033-295X.98.2.224)

[295X.98.2.224](http://dx.doi.org/10.1037/0033-295X.98.2.224)

Marx, D. M., & Roman, J. S. (2002). Female role models: Protecting women's math test performance. *Personality and Social Psychology Bulletin, 28*, 1183-1193.

<http://dx.doi.org/10.1177/01461672022812004>

Peetsma, T., Hascher, T., van, d. V., & Roede, E. (2005). Relations between adolescents' self

evaluations, time perspectives, motivation for school and their achievement in different countries and at different ages. *European Journal of Psychology of Education*, 20, 209-225.

Pintrich, P. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95, 667-686.
<http://dx.doi.org/10.1037/0022-0663.95.4.667>

Robins, R. W., & Beer, J. S. (2001). Positive illusions about the self: Short-term benefits and long-term costs. *Journal of Personality and Social Psychology*, 80, 340–352.
<http://dx.doi.org/10.1037/0022-3514.80.2.340>

Seligman, M. E. P. (1995). *The optimistic child*. New York: Harper Collins.

Shu, T.-M., & Lam, S.-f. (2011). Are success and failure experiences equally motivational? An investigation of regulatory focus and feedback. *Learning and Individual Differences*, 21, 724-727. <http://dx.doi.org/10.1016/j.lindif.2011.08.002>

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193-210.
<http://dx.doi.org/10.1037/0033-2909.103.2.193>

Van-Dijk, D., & Kluger, A. N. (2004). Feedback sign effect on motivation: Is it moderated by regulatory focus? *Applied Psychology: An International Review*, 53, 113-135.
<http://dx.doi.org/10.1111/j.1464-0597.2004.00163.x>

Table 1

Descriptive Statistics on Dependent Measures of the Four Groups in Studies 1 and 2

| | Study 1 | | | |
|--------------|--|--|--|--|
| | Success Feedback (<i>n</i> = 50) | | Failure Feedback (<i>n</i> = 59) | |
| | <u>Eastern Culture</u> (<i>n</i> = 25) | <u>Western Culture</u> (<i>n</i> = 25) | <u>Eastern Culture</u> (<i>n</i> = 30) | <u>Western Culture</u> (<i>n</i> = 29) |
| Persistence | 739.32 (123.45) | 781.52 ¹ (218.92) | 772 ^a (147.14) | 646.48 ^{a1} (160.79) |
| Performance* | 37.69 ^{b2} (.98) | 41.79 ^{b3} (.98) | 41.15 ^{c2} (.90) | 38.52 ^{c3} (.91) |

| | Study 2 | | | |
|--------------|---|--|---|--|
| | Success Feedback (<i>n</i> = 45) | | Failure Feedback (<i>n</i> = 48) | |
| | <u>Prevention Focus</u> (<i>n</i> = 22) | <u>Promotion Focus</u> (<i>n</i> = 23) | <u>Prevention Focus</u> (<i>n</i> = 26) | <u>Promotion Focus</u> (<i>n</i> = 22) |
| Persistence | 667.32 ¹ (161.88) | 741.13 (232.44) | 778.23 ^{a1} (209.74) | 652.77 ^a (179.88) |
| Performance* | 38.01 ^{b2} (1.2) | 41.49 ^{b3} (1.18) | 41.64 ^{c2} (1.1) | 37.53 ^{c3} (1.2) |

Note. For each dependent measure, means sharing the same letter superscript indicate significant difference across the two groups within the same feedback ($ps < .05$). Means sharing the same numerical superscript indicate significant difference across the two feedback within the same group ($ps < .05$). Numbers in parentheses are standard deviations.

*The means for performance are adjusted means and numbers in parentheses are standard errors.

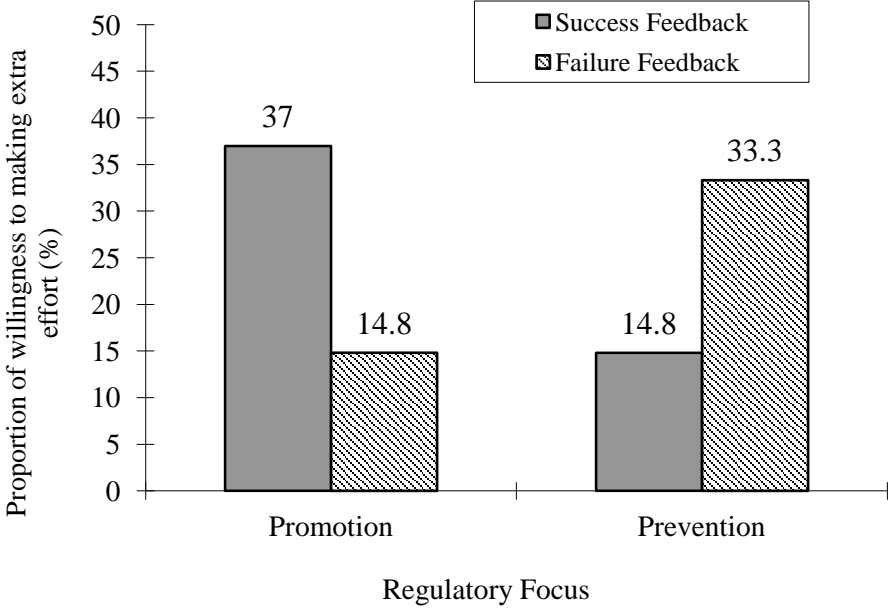


Figure 1. Proportion of willingness to make extra effort (in percentage) as a function of regulatory focus (promotion focus vs. prevention focus) and condition (success feedback vs. failure feedback).