

FEEDBACK SIGN AND SITUATIONAL GOAL ORIENTATION:
HOW IT AFFECTS PSYCHOLOGICAL STATES AND BEHAVIORS

by
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一三年，独离家
远赴学，到西洋
词不通，语不达
难会友，苦孤单
日盼夜，夜思乡
想亲人，念归家

四年逝，圆硕士
仍流离，人飘荡
不再忧，无在愁
因家人，懂关怀
因良师，明事理
因益友，知互助

ABSTRACT

This study sought to understand the effects of situational goal orientation (learning, performance-prove, and performance-avoidance), and how it could interact with feedback sign (positive and negative feedback) to influence psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and performance. This was investigated using a 3 x 2 factorial study. Participants took part in this study online and were randomly assigned into one of the six experimental conditions. Next, participants went through two trials of time-limited task, and their performance for each trial was separately recorded. After each trial, participants reported their psychological states. MANOVAs and follow-up analyses were conducted. The results revealed that only feedback sign has main effects on self-efficacy, in which self-efficacy increased following positive feedback and decreased following negative feedback. Most hypotheses in this study were not supported. The potential problems and suggestions for future research were discussed.

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CHAPTER I: LITERATURE REVIEW

A meta-analysis revealed that *goal orientation* (GO) was able to predict job performance above and beyond the Big Five (personality traits) and cognitive ability (Payne, Youngcourt, & Beaubien, 2007). As an implication, Payne and colleagues suggested that organizations may consider using GO to predict employees' job performance. GO can be dispositional and situational. Dispositional GO is relatively stable and difficult to change, whereas situational GO is more likely to be influenced by one's environment. That said, rather than developing a complicated selection system to hire employees high in a particular type of dispositional GO, it may be easier for organizations to prime employees with certain situational GO. Therefore, it is worthy to conduct research in situational GO.

In addition to GO, how feedback sign (i.e., positive or negative feedback) can affect performance is also another area that interested researchers. A meta-analysis showed mixed results regarding how feedback sign affected performance (Kluger & DeNisi, 1996). Kluger and DeNisi (1996) explained the mixed or nonsignificant results of feedback sign on performance could be moderated by individual differences, such as how they perceive the feedback. The question is whether GO is one of those individual differences.

Previous studies (e.g., Thompson & Musket, 2005; VandeWalle et al., 2001), found interaction effects between dispositional GO and feedback sign on performance and psychological factors such as self-efficacy. Those studies, however, mainly looked at the relationship between dispositional GO and feedback sign, and not much on situational GO. Namely, the relationship between situational GO and feedback sign is yet to be

explored. Therefore, this present study investigated two main areas: 1) the influences of situational GO, and 2) the relationship between situational GO and feedback sign on psychological states and performance.

Goal Orientation (GO)

The concepts of GO were proposed by Dweck (1986). In a series of child development studies, Dweck noticed that when confronting an obstacle, children tend to use either an adaptive (i.e., enjoy investing effort) or a maladaptive (i.e., learning helplessness and feeling anxiety) approach. She explained those differences were based on two different types of GO: *learning GO* and *performance GO*. Research studies on GO have different terminologies for learning GO and performance GO, but they are referring to the similar concepts (Elliot, 2005). For example, *mastery goal* (Ames & Archer, 1987; Butler, 2000), *task-involved goal* (Nicholls, 1984), and *growth seeking* (Horvath & Wambolt, 2009) are similar to learning GO; whereas *ability goal* (Butler, 2000), *ego-involved goal* (Nicholls, 1984), and *validation seeking* (Horvath & Wambolt, 2010) are similar to performance GO. According to these studies, people high in learning GO tend to be motivated to learn, are persistent against negative outcomes, and believe that ability can be developed; whereas people high in performance GO tend to be motivated to show their abilities or competence, are vulnerable to negative outcomes, and believe that ability is fixed (e.g., Dweck, 1986; Vandewalle, 2001).

Also, research found that there are two sub-categories within the dimension of performance GO (e.g., Elliot & Harackiewicz, 1996; Vandewalle, 1997). Those two subcategories are known as performance-prove GO and performance-avoidance GO. The major difference between the two is that people high in performance-prove GO tend to

look for the opportunity to demonstrate their abilities; whereas people high in performance-avoidance GO tend to avoid the risk of exposing their incompetence.

Dispositional GO Versus Situational GO. Previous studies found that GO can be treated as both dispositional and situational (e.g., Button, Mathiew, & Zajac., 1996; Seijts, Latham, Tasa, & Latham, 2004). According to Payne et al. (2007), *dispositional GO* is a relatively stable individual difference that determines a person's goal preferences in achievement situations; whereas *situational GO* is similar to the dispositional GO but induced by environmental conditions.

Numerous studies have examined the effects of situational GO, and results revealed the characteristics of situational GO are similar to dispositional GO (e.g., Cianci et al., 2010a; Cianci et al., 2010b; Elliot & Harackiewicz, 1996). For example, Philips and Gully (1997) showed that dispositional learning GO is positively related to self-efficacy, and dispositional performance GO is negatively related to self-efficacy. Elliot and Harackiewicz (1996) found similar results when using situational GO. Moreover, several studies found that situational GO has the tendency to override dispositional GO (e.g., Chen, Gully, Whiteman, & Kilcullen, 2000; Seijts et al., 2004). This may be due to dispositional GO being a more distal variable to performance when compared to situational GO (Kanfer, 1990).

In short, studies found that there are three types of GO: learning GO (i.e., focus on self-growth), performance-prove GO (i.e., focus on showing high competence over others), and performance-avoidance GO (i.e., focus on avoiding showing low competence compared to others). Additionally, studies have shown that there are situational and dispositional GOs, which both show similar characteristics.

Feedback Sign

Feedback sign refers to either positive or negative feedback. “Your performance is great” is an example of positive feedback. Researchers have debated the effects of feedback sign on psychological states (e.g., self-efficacy and motivation) and performance. For example, according to Cianci et al. (2010b), some researchers proposed that negative feedback increase the feedback-standard discrepancy, which motivates people to invest more effort to perform better so that the gap can be reduced; whereas positive feedback decreases the feedback-standard discrepancy, which demotivates people to invest effort further. On the other hand, researchers such as Bandura (1977) asserted that positive feedback increases people’s self-efficacy, hence motivating them to perform better; whereas negative feedback reduces people’s self-efficacy, hence demotivating them to perform further. To find out the potential influences of feedback sign, Kluger and DeNisi (1996) developed feedback intervention theory and tested the theory through meta-analyses. The meta-analyses revealed that the influences of feedback sign on variables such as performance and motivation were mixed.

Even though the results were mixed, the study has provided two valuable insights. First, feedback sign could affect psychological states and performance. Second, Kluger and DeNisi (1996) explained that mixed results could be due to individual differences. That said, dispositional GO can potentially be an individual difference that affects feedback sign. Since situational GO tends to show similar characteristics as dispositional GO, I was interested to know whether situational GO can interact with feedback sign hence showing clear influences on the psychological states and performance. Namely, this is the focus of my study.

Psychological States

I was interested in investigating the four interconnected psychological states mentioned in Kluger and DeNisi (1996): off-task thoughts, affective thinking, anxiety, and self-efficacy. Previous research has suggested that anxiety may influence performance (e.g., Starcke, Wolf, Markowitsch, & Brand, 2008). When people feel anxious, off-task thoughts (e.g., worrying the consequences, fear of failure, etc.) tend to distract people from performing or learning (e.g., Cianci et al., 2010a; Papantoniou et al., 2012). Subsequently, this causes poorer performance and consistent negative feelings (i.e., negative affect; Papantoniou et al., 2012). Also, as suggested by the social cognitive theory, poor performance (i.e., negative feedback) may lower people's self-efficacy, which in turn may further decrease the performance (Bandura, 1977). As the feedback-standard discrepancy increases, people may feel more anxious to close the gap, hence continuing the loop of more off-task thoughts, more negative affect, low self-efficacy, poor performance, more anxiety, and so on. It would be interesting to learn how situational GO and feedback sign may play a role in influencing these psychological states.

Psychological States, Feedback Sign, and Situational GO

Hypothesis 1. Kozlowski and Bell (2006) stated that the two types of situational performance GO (i.e., prove and avoid) tend to direct attention to self-image; whereas the situational learning GO tends to direct attention to the task. Focusing attention to personal self-image would mean people are distracted and concerned about their performance compared to others. Hence, they may have more off-task thoughts, higher anxiety, higher negative affect, and lower self-efficacy (i.e., poorer psychological states). In contrast,

focusing attention on the task process would mean people are less distracted and less worried about their performance compared to others, hence they may have less off-task thoughts, lower anxiety, lower negative affect, and higher self-efficacy (i.e., better psychological states). Namely, people in the situational learning GO condition should have better psychological states compared to those with a situational performance GO – both prove and avoidance. On the other hand, people high in dispositional performance-prove GO are more optimistic and confident in their abilities compared to those high in dispositional performance-avoidance GO (VandeWalle et al., 2001). Since situational GO has similar characteristics as dispositional GO, I hypothesize that situational GO have main effects on the psychological states.

Hypothesis 1: Situational GO will affect psychological states in the following ways.

1a: People in the situational learning GO condition will have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) compared to those in the situational performance-prove GO and a situational performance-avoidance GO conditions.

1b: People in situational performance-prove GO condition will have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) compared to those in the situational performance-avoidance GO condition.

Hypothesis 2. Social cognitive theory (Bandura, 1977) proposed that negative feedback tends to decrease self-efficacy, and positive feedback tends to increase self-efficacy. I assume the effects will generalize to other psychological states (i.e., off-task

thoughts, negative affect, and anxiety). That said, when receiving negative feedback, people tend to have poorer psychological states (i.e., more off-task thoughts, more negative affect, more anxious, and lower self-efficacy); whereas when receiving positive feedback, people will have better psychological states (i.e., less off-task thoughts, less negative affect, less anxious, and higher self-efficacy). Given that situational learning GO tends to have better psychological states than both the situational performance GOs, I expect positive feedback will further enhance the psychological states in the situational learning GO condition; whereas negative feedback will slightly deteriorate the psychological states in the situational learning GO condition.

Hypothesis 2: Feedback sign will affect the situational learning GO condition in the following ways.

2a) Following positive feedback, people in the situational learning GO condition would have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) than those with a situational performance-prove GO and situational performance-avoidance GO conditions.

2b) Following negative feedback, people in the situational learning GO condition will have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) than those in the situational performance-prove GO and the situational performance-avoidance GO conditions.

2c) People in the situational learning GO condition will have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) following positive feedback than following negative feedback.

Research Question 1. Vandewalle et al. (2001) revealed that dispositional performance-prove GO has no correlation with feedback. Elliot and Harackiewicz (1996), however, showed that positive feedback motivated people in the situational performance-prove GO condition. Given that situational and dispositional GOs tend to show similar characteristics, there is a chance that feedback sign does not affect situational GO on the psychological states. In other words, whether feedback sign would affect situational performance-prove GO was uncertain. Hence, the present study formulates some research questions to investigate how feedback sign will affect situational performance-prove GO.

Research Question 1: Will feedback sign affect the situational performance-prove GO conditions in the following ways?

1a) Following positive feedback will the people in the situational performance-prove GO condition have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) than those in the situational performance-avoidance GO condition?

1b) Following negative feedback will people in the situational performance-prove GO condition have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) than those in the situational performance-avoidance GO condition?

1c) Will people in the situational performance-prove GO condition have better psychological states (i.e., less off-task thoughts, lower negative affect, less anxiety, and higher self-efficacy) following positive feedback than following negative feedback?

Behavioral Performance, Feedback Sign, and Situational GO

Hypothesis 3. Elliot and Harackiewicz (1996) found that people in the situational learning GO and the situational performance-prove GO conditions invested more effort than those in the situational performance-avoidance GO condition. However, there was no significant difference in the invested effort between situational learning GO and situational performance-prove GO. Elliot and Harackiewicz (1996) explained that the task nature might have motivated people in the situational performance-prove GO condition to invest as much effort as those in the situational learning GO condition. In fact, a study found that people with the dispositional performance GO are more motivated to do a simple task, but get demotivated to do a difficult task (Steele-Johnson, Beauregard, Hoover, & Schmidt, 2000). That said, task difficulty may affect the effects of situational performance-prove GO on the invested effort. Although task difficulty was not part of the investigation of this study, I tried to control the influence of task difficulty by including easy, medium, and hard items. By controlling the task difficulty, I expect people in the situational performance-prove GO condition are not as motivated as the people in the situational learning GO condition. Additionally, situational performance-avoidance GO tends to show deleterious effects on psychological states. Therefore, I assume people in the avoidance condition will invest less effort than those in the situational learning GO condition. Furthermore, according to expectancy theory, the effort level is positively related to performance (Jex & Britt, 2014). Therefore, I suppose if a situational GO condition increases the amount of invested effort, it will also increase the performance.

Hypothesis 3: Situational GO will affect the investment of effort and performance in the following ways.

3a: People in the situational learning GO condition will have higher effort and performance compared to those in the situational performance-prove GO and in the situational performance-avoidance GO conditions.

3b: People in the situational performance-prove GO condition will have higher effort and performance compared to those in the situational performance-avoidance GO condition.

Hypothesis 4. In Cianci et al. (2010b), results showed that following positive feedback, people in the situational learning GO condition demonstrated poorer performance compared to those in the situational performance GO condition. The authors concluded that people in the situational learning GO condition viewed positive feedback as an indication of successful strategies and adequate effort level. Therefore, the participants were neither motivated to learn new strategies nor invest more effort; whereas people in the situational performance GO condition (the study did not specify whether it was performance-prove or performance-avoidance) viewed positive feedback as a channel to demonstrate their competence to others. Subsequently, they are motivated to invest more effort to perform better.

In contrast, following negative feedback, people in the situational learning GO condition demonstrated better performance compared to those with a situational performance GO (Cianci et al., 2010b). The authors suggested that people in the situational learning GO condition viewed negative feedback as an indication of an area for improvement and inadequate effort level. Consequently, they were motivated to learn

new strategies and invest more effort; whereas people in the situational performance GO condition viewed negative feedback as an indication of incapability. The perception of incapability might have distracted them from the task. Hence, they invested less effort and performed poorer.

On the other hand, Elliot and Harackiewicz (1996) showed that positive feedback enhanced the effort level of the people in the performance-prove GO condition compared to the performance-avoidance GO. Their study, nevertheless, did not examine the influence of negative feedback. The present study assumes people in the performance-avoidance condition will invest even less effort and perform poorer after receiving negative feedback.

Hypothesis 4: Situational GOs will interact with feedback sign in the following ways:

4a) following positive feedback, people in the situational learning GO condition will demonstrate lower effort level and performance than those in the situational performance-prove GO and the situational performance-avoidance GO conditions.

4b) following negative feedback, people in the situational learning GO condition will demonstrate higher effort level and performance than those in the situational performance-prove GO and the situational performance-avoidance GO conditions

4c) people in the situational learning GO condition will demonstrate lower effort level and performance following positive feedback than following negative feedback.

4d) following positive feedback, people in the situational performance-prove GO condition will demonstrate higher effort level and performance than those in the situational performance-avoidance GO condition

4e) following negative feedback, people in the situational performance-prove GO condition will demonstrate higher effort level and performance than those in the situational performance-avoidance GO condition

4f) people in the situational performance-prove GO condition will demonstrate higher effort level and performance following positive feedback than following negative feedback.

As a point of clarification, the primary interests of the present study are the main effects of situational GO and the relationship between situational GO and feedback sign. Thus, the main effects of feedback sign on the psychological states and performance were not explored.

CHAPTER II: METHODS

Participants

A total of 420 participants were recruited from MTurk, an online work market. As an incentive, MTurk participants received \$0.50 for completing the experiment. Before any analyses, some of the participants were removed for the following reasons. First, if any participants did the study more than once, only their first set of responses was kept for the analyses ($n = 4$ were removed). Second, the participants did not correctly indicate their goals (i.e., situational GO) or the feedback they received ($n = 177$ were removed). Third, the participants responded “No” to the question “should we include your data in our analyses ($n = 6$ were removed).” Lastly, participants did not pass the training trial were removed because 1-way Welch Analysis of Variance (ANOVA) indicated they performed significantly poorer than those who passed ($n = 53$ were removed). This suggested that participants who failed did not understand how to do the word component tasks, so their performance was unreliable for analysis. After screening out the unqualified participants, 180 participants remained (69.4% female, 30% male, 0.6% preferred not to answer). Around 69% of the participants reported were over 30 years old, 16.7% were ages 26-30, 11.7% were ages 22-25, and 1.7% were ages 18-21. The ethnicity distribution was showed as followed: 88.9% Caucasians, 6.7% Asian/Pacific Islander, 1.1% African-American, 1.1% Native American, 0.6% Hispanic or Latino, 1.7% identified themselves as Others.

Design and Procedure

MTurk participants who intended to participate this study would get a link from Mturk which led them to Qualtrics, an online survey tool. After checking the agreement

box for the consent form (see Appendix A), Qualtrics randomly assigned participants into one of the six conditions. Then, participants read the task instructions regarding the morphological decomposition task. Also, participants were informed that their results would be analyzed in real time. In reality, nevertheless, the system was pre-set to give either a constant positive feedback or a constant negative feedback. The priming of situational GO was included at the very end of the instructions.

A *morpheme* is the most basic grammatical unit in a given language. For example, “boy” has one morpheme and “boyishness” has three morphemes (boy + ish + ness). In the experiment, participants went through a training trial and two experimental trials. Participants had the choices of “1” to “4” to indicate the numbers of morphemes in a word. Throughout the study, “morpheme” and “morphological decomposition” were called as “word component” and “word decomposition” respectively. The purpose was to make the task instructions easier for participants to comprehend. Similarly, to avoid confusion, “word component” and “word decomposition” would replace “morpheme” and “morphological decomposition” respectively for the rest of the present paper.

Training trial was set in blocks of 12 items with no time limit. Participants must obtain at least 10 out of the 12 correct to proceed to the experiment trials (See Appendix B for the training task instructions). If they did not pass the first set of training trial, they were given a second set of training trial. If they failed the second set of training trial, their data of the rest of the study would not be analyzed. After the training trial, participants were directed to complete the self-efficacy measure. Next, participants proceeded to read the task instructions for the Trial 1, which included a priming section within the

instruction (See Appendix B for the Trial 1 and 2 task instructions and Appendix C for situational GO priming).

Next, participants started their first 60-item experimental trial (See Appendix D). Participants were informed that they would have 40 seconds for each of the three pages (20 items on each page), and they should try to complete as many items as they could. Once participants had finished the first trial, they self-reported how much effort they think they had invested, and then they completed the measures of off-task thoughts, negative affect, and anxiety (See Appendix E to H). Then, participants would be directed to check their word decomposition results (i.e., either a positive or a negative feedback, see Appendix I). After receiving their feedback, participants proceeded to a page that showed the answer for each item (See Appendix J). Then, participants answered the self-efficacy measure (See Appendix K). Next, participants went through the same process but with different items for Trial 2. Upon finishing all the trials and measures, participants answered additional measures that were not the main investigations of the present study (i.e., self-report satisfaction, perception of feedback accuracy, and manipulation checks; see Appendix L), demographic questions (see Appendix M), reactions to the study (Appendix N), and be debriefed (see Appendix O).

Independent Variables – Manipulations

Participants were randomly assigned into one of the six conditions, crossing three types of situational GO conditions and two feedback conditions. Once the condition was assigned, participants would remain in the same condition for the rest of the experiment.

Situational GOs priming. The priming of situational GO happened before each trial at the end of the task instruction.

Participants in the *situational learning GO condition* would read “[continued from the task instructions] ... Most fluent adults can accurately identify word component(s) in seconds and the ability is relatively malleable for all people. In other words, word decomposition ability can be improved through practice. In the coming round, we will assess your word decomposition ability. Your results will be analyzed in real time and compared to the results of previous participants. Your goal throughout the next round is to learn how to identify the number of word component(s) in a word as accurately as possible. You should view this as an opportunity to learn and develop your word decomposition ability.” (adapted from Cianci et al., 2010b).

Participants in the *situational performance-prove GO condition* would read “[continued from the task instructions] ... Most fluent adults can accurately identify word components in seconds and the ability is relatively fixed for all people. In other words, word decomposition ability can hardly be improved through practice. In the coming round, we will assess your word decomposition ability. Your results will be analyzed in real time and compared to the results of previous participants. Your goal throughout the next round is to identify the number of word component(s) in a word as accurately as possible. You should view this as an opportunity to show that you are good in word decomposition.” (adapted from Cianci et al., 2010b).

Participants in the *situational performance-avoidance GO condition* would read “[continued from the task instructions] ... Most fluent adults can accurately identify word components in seconds and the ability is relatively fixed for all people. In other words, word decomposition ability can hardly be improved through practice. In the coming round, we will assess your word decomposition ability. Your results will be analyzed in

real time and compared to the results of previous participants. Your goal throughout the next round is to avoid inaccurately identifying the number of word component(s) in a word. You should view this as an opportunity to show that you are not poor in word decomposition.” (adapted from Cianci et al., 2010b).

Feedback manipulation. Depending on the assigned condition, participants would receive the same positive or negative feedback after the first and second trials.

In the *positive feedback condition*, participants would see “Your word decomposition ability is good. It is at the top 20% (rounded to the nearest 5%), indicating that your word decomposition ability is better than 80% of the people.”

In the *negative feedback condition*, participants would see “Your word decomposition ability is poor. It is at the bottom 20% (rounded to the nearest 5%), indicating that your word decomposition ability is poorer than 80% of the people.”

Dependent Variables – Measures

Self-report effort was operationally defined as the percentage of effort that participants think they have spent during the trials. Participants self-reported how much effort they think they have invested in the trial – from a percent of “0” to “100.” See Appendix E.

Off-task thoughts were operationally defined as the internal thinking that distracts people from performing or learning during the trials. Off-task thoughts were measured with an 8-point Likert scale ($\alpha = .59$) as developed by Kanfer, Ackerman, Murtham, Dugdale, and Nelson (1994). Kozlowski and Bell (2006) changed the subscale from an 8-point Likert scale to a 5-point Likert scale (1 = “never” and 5 = “constantly;” $\alpha = .69$). The present study used the 5-point scale as Kozlowski and Bell (2006) did. Some

sample items were “I daydreamed while doing the game” and “I wondered about how my performance compared with others.” Furthermore, three additional items were added to this section to assess whether participants were distracted by the assigned goals (e.g., “I thought about how well I was performing”). The Cronbach's alpha in the present study was .82. See Appendix F.

Negative affect was operationally defined as the occurrence of unfavorable emotions, mood, and attitudes. Negative affect was measured with an 8-point Likert scale (alpha = .78) as developed by Kanfer et al. (1994). Kozlowski and Bell (2006) changed the subscale from an 8-point Likert scale to a 5-point Likert scale (1 = “*never*” and 5 = “*constantly*,” alpha = .80). Some sample items were “I got mad at myself during the game” and “I thought about how poorly I was performing.” The present study used the 5-point scale as Kozlowski and Bell (2006) did. The Cronbach alpha in the present study was .84. See Appendix G.

Anxiety was operationally defined as contemporary feelings such as worry, calm, tension, and content, after the trials. Anxiety was assessed with a 6-item measure using a 4-point Likert scale (1 = “*Not at all*” and 4 = “*Very much*,” alpha = .82; Marteau & Bekker, 1992). Some sample items were “I feel calm” and “I feel tense.” The Cronbach's alpha in the present study was .90. See Appendix H.

Self- efficacy was operationally defined as the confidence level of participants if they were asked to perform for another round of the word component task. Self-efficacy was assessed with an 8-item measure using a 5-point Likert scale (1 = “*Strongly Disagree*” and 5 = “*Strongly Agree*,” alpha = .95; Kozlowski et al., 2001). Some sample items were “I believe I can meet the challenge of the game” and “I am certain that I can

manage the requirements of the game.” The Cronbach’s alpha in the present study was .96. See Appendix K.

Behavioral performance was made up of three parts: total score, attempts, and accuracy. The *total score* was operationally defined as the correct answers obtained in the Trial 2. The *attempts* were operationally defined as the number of answers that the participants provided in Trial 2. *Accuracy* was computed through dividing the total score by the number of attempts in the Trial 2. The present study only focused on the results collected in Trial 2, so the behavioral performance in Trial 1 was not examined.

Additional Measures

Self-report satisfaction was operationally defined as the sense of satisfaction after participants completed both trials. Participants used three 5-point Likert scales (1 = “*Strongly Disagree*” and 5 = “*Strongly Agree*”) to report how satisfied they feel in terms of learning, performing, and avoiding poor performance. This assessment took place after the manipulation checks. See Appendix L.

Perception of the feedback accuracy was asked to check whether participants viewed the given feedback sign as accurate. Participants answered the 5-point Likert scales (1 = “*Strongly Disagree*” and 5 = “*Strongly Agree*”) to indicate their agreement levels to the accuracy of the feedback they received. See Appendix L.

Manipulation checks were implemented after the measures of Trial 2. The first manipulation check was to assess whether participants were aware of their respective situational goals. The second manipulation check is to assess whether participants in each feedback condition were aware of the type of feedback they received (i.e., positive or negative feedback). See Appendix L.

CHAPTER III: RESULTS

There are two main interests of the present study: 1) the influences of situational GO, and 2) the relationship between situational GO and feedback sign on the psychological states and behavioral performance. Because this study involved examining the main effects and interaction effects of the independent variables (i.e., situational GO and feedback sign) on several dependent variables (i.e., psychological states and behavioral performance), Multivariate Analysis of Variance (MANOVA) was considered as the primary analytical method.

As a point of clarification, the primary analyses did not investigate the changes of the dependent variables across the trials. The main reason is that examining the effects of situational GO and feedback sign across the trials will require a 3-way mixed MANOVA, which is likely further complicating the analyses and interpretations. Thus, to avoid the trial effects complicating the analyses, the present study only used the Trial 2 dependent variables (i.e., psychological states and behavioral performance).

This Results section discusses several areas. First, the primary analytic strategy – Multivariate Analysis of Variances (MANOVA) – for the study. Second, the normal distributions of the dependent variables. Third, the hypotheses testing results. Lastly, the findings of additional analyses.

Analytic Strategy

In the current study, MANOVAs were used to analyze the relationship between situational GO and feedback sign on psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and behavioral performance (i.e., total score, attempts, accuracy, and effort). MANOVA is an extension of ANOVA to a situation in which there

are several dependent variables (Tabachnick & Fidell, 2013). Tabachnick and Fidell (2013) asserted that there are two advantages of using MANOVA over ANOVA when there are multiple dependent variables in the study. First, unlike ANOVA that runs an analysis for each DV, MANOVA examines dependent variables as a group. This reduces the chance of inflated Type I error. Second, under certain conditions, MANOVA may show findings that are not found in separate ANOVAs (see Tabachnick & Fidell, 2013, Chapter 7). Therefore, the present study used MANOVA as the primary analytical strategy.

Bray and Maxwell (1985) mentioned that MANOVA has several important assumptions. First, the data are randomly sampled from the population. In the present study, the MTurk participants were self-selected, which meant the data were not randomly sampled. Although the first assumption was not fulfilled, Bray and Maxwell (1985) mentioned that under many circumstances, MANOVA is relatively robust to violations of the assumptions. That said, the violation of the first assumption might not be a major concern in the present study. Second, the observations are independent from each other. In the present study, participants were randomly assigned into one of the six conditions, which were independent from each other. In addition, for those participants who participated more than once, only their first set of responses were analyzed so that the independency of the data was ensured. Therefore, the present study met the second assumption. Third, the dependent variables have a multivariate normal distribution within each cell. Tabachnick and Fidell (2013) mentioned that a sample size of at least 20 within each cell is sufficient to meet the multivariate normality assumption. In the current study, the number of participants in each cell ranges between 26 to 32, hence the multivariate

normality was assumed. Third, homogeneity of covariance among the dependent variables existed, which can be examined through *Box's M* (at $p < .001$ indicates the violation of homogeneity of covariance). Tabachnick and Fidell (2013), however, stressed that *Box's M* is an extremely sensitive test of homogeneity of covariance. Therefore, it needs to be used with cautions. The *Box's M* for MANOVAs would be discussed later.

Moreover, Tabachnick and Fidell (2013) suggested that when sample sizes among the cells are unequal, it is recommended to report *Pillai's Trace* rather than *Wilk's Lambda*. The sample sizes were unequal among the cells (ranged between 26 to 32), so *Pillai's Trace* would be reported.

Preliminary Analyses

As a reminder, before any analysis, I cleaned the data by eliminating participants who did not meet certain criteria (see "Participants" in the Method section). Then, the distribution of each dependent variable was examined. Most dependent variables did not show extreme skewness (i.e., within two standard deviations). Self-reported effort, however, was extremely skewed to the left, $Mean = 91.85$, $Median = 98.00$, $skewness = -2.087$ ($SE = .182$). Further analysis was run to detect potential univariate outliers within the effort. Using a criterion $z = |3|$, an outlier was found and removed from effort. Then, the distribution of effort was examined, which was still heavily skewed to the left (i.e., negatively skewed beyond two standard deviations), $Mean = 92.25$, $Median = 98.00$, $skewness = -1.338$ ($SE = .182$). In addition, further analysis revealed that effort significantly violated homogeneity of variances at the univariate level, $F(5, 173) = 5.97$, $p = .000$. These analyses suggested that effort has a high chance of causing Type I error,

and it should not be analyzed as part of the MANOVA. Hence, effort was removed from the analyses of the behavioral performance.

Psychological States

To test the Hypothesis 1, Hypothesis 2, and Research Question 1, a 3 x 2 MANOVA was run. In this analysis, the independent variables were situational GO (learning, performance-prove, and performance-avoidance) and feedback sign (positive and negative; while the dependent variables were the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy). The *Box's Ms* of all the following MANOVAs in this section were examined and were not significant, indicating homogeneity of covariance. See Table 1 for descriptive statistics and Table 2 for correlations.

Two-way MANOVA on the psychological states. The 2-way MANOVA showed that feedback sign had main effects on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy), $F(4, 171) = 14.42, p < .001$, *Pillai's Trace* = .253, *partial* $\eta^2 = .253$. The situational GO, however, did not have main effects on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy), $F(8, 344) = 0.94, p = .484$, *Pillai's Trace* = .043, *partial* $\eta^2 = .021$. Since the situational GO did not have main effects on the psychological states, Hypothesis 1 was not supported. Besides, the analysis showed that there was a significant interaction effect between situational GO and feedback sign on the psychological states, $F(8, 344) = 2.21, p = .026$, *Pillai's Trace* = .098, *partial* $\eta^2 = .049$. To further investigate the relationship between situational GO and feedback sign on psychological states, simple effect tests were run.

Simple effect 1-way MANOVAs across the feedback sign conditions. Simple effect 1-way MANOVAs were used to examine the psychological states across the situational GO within each feedback sign condition. Bonferroni approach was used to adjust the alpha level, $\alpha = .05/2 = .025$. The simple effect 1-way MANOVAs showed that the situational GO did not have main effects on the psychological states across the positive feedback condition, $F(8, 174) = 1.26, p = .269, Pillai's Trace = .109, partial \eta^2 = .055$, and the negative feedback condition, $F(8, 166) = 1.82, p = .077, Pillai's Trace = .161, partial \eta^2 = .080$. Namely, regardless feedback sign conditions, situational learning GO did not have better psychological states than situational performance-prove GO and situational performance-avoidance GO, hence Hypothesis 2a and 2b were not supported. In addition, responding to the research question 1a and 1b, the results showed that, in both feedback sign conditions, situational performance-prove GO did not have better psychological states than situational performance-avoidance GO.

Simple effect 1-way MANOVAs across the situational GO conditions. Simple effect 1-way MANOVAs were used to investigate the psychological states across the feedback sign within each situational GO condition. Bonferroni approach was used to adjust the alpha level, $\alpha = .05/3 = .017$. The results showed that feedback signs had impacts on psychological states across the situational learning GO, $F(4, 57) = 8.46, p < .001, Pillai's Trace = .373, partial \eta^2 = .373$, the situational performance-prove GO, $F(4, 58) = 4.65, p = .003, Pillai's Trace = .243, partial \eta^2 = .243$, and situational performance-avoidance GO, $F(4, 50) = 6.40, p < .001, Pillai's Trace = .339, partial \eta^2 = .339$.

Simple effect 1-way ANOVA across the situational GO conditions. To identify the influences of feedback signs on each dependent variable across the different types of situational GO, four simple effect 1-way ANOVAs were run, one for each dependent variable. Since the simple effect 1-way ANOVAs were the follow-up analyses for the simple effect 1-way MANOVAs, using the Bonferroni approach the alpha would be .05 divided by the three simple effect 1-way MANOVAs (one for each situational GO condition), and then divided by the four simple effect 1-way ANOVAs (i.e., $.05/3 = .017$, and then $.017/4 = .004$). Thus, an alpha of .004 was used. The results revealed feedback sign had main effects on the self-efficacy across the situational learning GO condition, $F(1, 60) = 19.77, MSE = 0.79, p < .001, partial \eta^2 = .248$, situational performance-prove condition, $F(1, 61) = 14.21, MSE = 0.89, p < .001, partial \eta^2 = .189$, and situational performance-avoidance condition, $F(1, 53) = 22.77, MSE = 0.90, p < .001, partial \eta^2 = .300$. The other simple effect 1-way ANOVAs, however, showed that feedback signs within each situational GO condition did not impact off-task thoughts, negative affect, and anxiety. See Table 3. In the situational learning GO condition, results showed that positive feedback yielded better self-efficacy than negative feedback, but no differences among off-task thoughts, negative affect, and anxiety, hence Hypothesis 2c was partially supported. Moreover, in answering research question 1c, results showed that situational performance-prove GO with positive feedback would have better self-efficacy than with the negative feedback condition; whereas there were no differences across off-task thoughts, negative affect, and anxiety.

Clarifications for the contradicted findings between the 2-way MANOVA and simple effect 1-way ANOVAs. The simple effect 1-way ANOVAs on self-efficacy (i.e., the follow-up analyses examining the effects of feedback sign on self-efficacy across the situational GO conditions, see Table 3) showed only the main effects of feedback sign. This contradicted to the 2-way MANOVA results that suggested there should be some interaction effects between the situational GO and feedback sign at the univariate level. As a reminder, the 2-way MANOVA results showed that there were significant interaction effects between the situational GO and feedback sign on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy). To examine which dependent variables were affected by the interaction effects, simple effect follow-up analyses were conducted (i.e., simple effect 1-way MANOVAs and simple effect 1-way ANOVAs). The follow-up analyses showed that feedback sign only affected the self-efficacy across the situational GO conditions. If there were interaction effects between situational GO and feedback sign on self-efficacy, the influences of feedback sign on the self-efficacy should be different across the situational GO conditions. For example, as an illustration, the interaction effects might cause the self-efficacy decreased following a positive feedback and increased following a negative feedback in the situational learning GO condition; conversely, the self-efficacy increased following positive feedback and decreased following negative feedback in the performance-prove GO condition. The results, however, showed that the influences of feedback sign on self-efficacy were the same across the situational GO conditions, in which the self-efficacy increased following positive feedback and decreased following negative feedback. This suggested that the self-efficacy was affected by the main effects

of feedback sign, instead of the interaction effects between situational GO and feedback sign. That said, at the simple effect 1-way ANOVA level, only the main effects of feedback sign were found, which contradicted with the 2-way MANOVA findings that showed there should be some interaction effects between situational GO and feedback sign at the univariate level.

To clarify the contradicted findings, I conducted four 2-way ANOVAs (i.e., analyses at the univariate level) to examine the effects of situational GO and feedback sign on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy). The alpha level was adjusted using Bonferroni approach, in which the alpha was divided by four because there were four 2-way ANOVAs (i.e., $\alpha = .05/4 = .013$). Please note that I only intended to examine the interaction effects between the situational GO and feedback sign at the univariate level so that I could compare and clarify the interaction effects at the univariate and multivariate levels. That said, the main effects of the situational GO and feedback sign at the univariate level were not reported. The results revealed that no interaction effects between situational GO and feedback sign were significant across the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy). See Table 4. According to Manly (2004), it is possible to have insignificant univariate tests but a significant multivariate test. Manly (2004) explained, “this can occur because of the accumulation of the evidence from the individual variables in the overall tests (p. 41).” To put it simply, at the univariate level (i.e., ANOVAs), the insignificant effects across the dependent variables added up and contributed to a significant effect at the multivariate level (i.e., MANOVAs). That said, in the present study, it is possible that the insignificant interaction effects across the psychological

states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) had contributed to the significant interaction effects shown by the 2-way MANOVA. This could explain why in the present study, the 2-way MANOVA showed interaction effects, but the follow-up analyses at the univariate level showed only main effects instead of interaction effects. In short, among all the analyses I had run until this point, only feedback sign showed significant main effects on the self-efficacy, in which the self-efficacy increased following positive feedback and decreased following negative feedback.

Table 1

Descriptive Statistics for the Psychological States by Situational GO, Feedback Sign, and Interaction

	<i>n</i>	Off-task Thoughts		Negative Affect		Anxiety		Self-efficacy		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
SGO										
Learning	62	2.05	0.67	2.30	1.11	1.94	0.71	3.43	1.02	
Prove	63	1.99	0.66	2.13	1.01	2.10	0.74	3.34	1.04	
Avoidance	55	2.05	0.71	2.28	1.15	2.18	0.75	3.26	1.12	
FS										
+	92	1.94	0.68	2.05	1.04	1.97	0.66	2.82	1.07	
-	88	2.12	0.67	2.42	1.11	2.18	0.80	3.85	0.75	
SGO (FS)										
Learning (+)	31	1.95	0.64	2.26	1.13	2.04	0.76	3.94	0.87	
Learning (-)	31	2.14	0.70	2.33	1.11	1.85	0.65	2.93	0.91	
Prove (+)	32	2.01	0.69	1.88	0.90	1.89	0.60	3.78	0.70	
Prove (-)	31	1.98	0.64	2.39	1.06	2.31	0.83	2.88	1.14	
Avoidance (+)	29	1.85	0.71	2.03	1.07	1.97	0.62	3.84	0.67	
Avoidance (-)	26	2.26	0.66	2.55	1.2	2.43	0.82	2.62	1.18	
Total	180	2.03	0.68	2.23	1.09	2.07	0.74	3.35	1.05	

Note. SGO = Situational Goal Orientation; FS = Feedback Sign; “+” = Positive Feedback; “-” = Negative Feedback; SGO (FS) = Interacting conditions between situational GO and feedback sign.

Table 2

Intercorrelations and Cronbach's Alpha for the Dependent Variables

	1	2	3	4	5	6	7
1 Off-task thoughts	(.82)	.72**	.28**	-.22**	.03	.03	.02
2 Negative affect		(.84)	.53**	-.36**	-.07	-.14	.13
3 Anxiety			(.90)	-.45**	.03	-.05	.15
4 Self-efficacy				(.96)	.03	.08	-.09
5 Total score					--	.80**	.33**
6 Attempts						--	.29**
7 Accuracy							--

Note: Cronbach's alpha for each measure was included in the parentheses.

$N = 180$.

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

Table 3

Simple Effect 1-way ANOVAs for Feedback Sign Across the Situational GO Conditions

DVs	SGO	<i>df</i>	<i>df</i> <i>error</i>	<i>F</i>	<i>MSE</i>	<i>p</i>	<i>Partial</i> η^2
Off-task Thoughts	Learning	1	60	1.26	0.37	.267	.020
	Prove	1	61	0.50	0.20	.481	.008
	Avoidance	1	53	4.45	0.41	.039	.078
Negative Affect	Learning	1	60	0.07	1.26	.793	.001
	Prove	1	61	4.30	0.96	.042	.066
	Avoidance	1	53	2.85	1.28	.097	.051
Anxiety	Learning	1	60	1.09	0.51	.301	.018
	Prove	1	61	5.22	0.52	.026	.079
	Avoidance	1	53	5.59	0.52	.022	.095
Self-efficacy	Learning	1	60	19.77	0.79	.000	.248
	Prove	1	61	14.21	0.89	.000	.189
	Avoidance	1	53	22.77	0.90	.000	.300

Note. SGO = Situational Goal Orientation. Alpha level was adjusted using Bonferroni approach, $\alpha = .05/12 = .004$.
 $N = 180$.

Table 4

Two-way ANOVAs Examining the Interaction Effects between Situational GO and Feedback Sign

DVs	<i>F</i>	<i>MSE</i>	<i>p</i>	<i>Partial</i> η^2
Off-task Thoughts	1.49	0.46	.229	.017
Negative Affect	0.84	1.16	.433	.010
Anxiety	3.86	0.51	.023	.043
Self-efficacy	0.47	0.86	.629	.005

$N = 180$. $df = 2$. $df_{error} = 174$.

Alpha level was adjusted using Bonferroni approach, $\alpha = .05/4 = .013$.

Behavioral Performance

To test Hypothesis 3 and Hypothesis 4, a 3 x 2 MANOVA was run. In this analysis, the independent variables were situational GO (learning, performance-prove, and performance-avoidance) and feedback sign (positive and negative; while the dependent variables were the total score, attempts, and accuracy (i.e., behavioral performance). See Table 2 for correlations and Table 5 for descriptive statistics.

Two-way MANOVA on the behavioral performance. The 2-way MANOVA revealed that there were no main effects for situational GO, $F(6, 346) = 0.27, p = .952$, *Pillai's Trace* = .009, *partial* $\eta^2 = .005$, and feedback sign, $F(3, 172) = 1.32, p = .270$, *Pillai's Trace* = .022, *partial* $\eta^2 = .022$. Additionally, there was no interaction effect between situational GO and feedback sign on the behavioral performance, $F(6, 246) = 0.59, p = .739$, *Pillai's Trace* = .020, *partial* $\eta^2 = .010$. The *Box's M* of the MANOVA has a value of 65.99, $p < .001$, indicating the violation of homogeneity of covariance. The violation of homogeneity of covariance would only be a concern when an MANOVA finds significant results. The reason is that the significant results may be caused by inflated Type I error. In this study, however, the MANOVA found nothing significant, therefore the violation of homogeneity of covariance was not investigated further.

Hypothesis 3 that expected situational GO to have main effects on the behavioral performance was not supported. In addition, Hypothesis 4 that assumed situational GO and feedback sign would have interaction effects on the behavioral performance was not supported.

Table 5

Descriptive Statistics for Behavioral Performance by Situational GO, Feedback Sign, and Interaction

	<i>n</i>	Total Score		Attempt		Accuracy	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SGO							
Learning	62	25.18	6.53	34.40	8.09	0.74	0.12
Prove	63	25.65	5.84	34.95	8.30	0.74	0.10
Avoidance	55	26.09	6.45	35.05	8.35	0.75	0.11
FS							
+	92	25.24	6.32	34.73	8.69	0.74	0.12
-	88	26.02	6.18	34.86	7.71	0.75	0.10
SGO (FS)							
Learning (+)	31	24.81	7.11	34.45	9.14	0.73	0.11
Learning (-)	31	25.55	6.00	34.35	7.04	0.75	0.12
Prove (+)	32	25.78	5.24	35.94	8.08	0.73	0.12
Prove (-)	31	25.52	6.49	33.94	8.53	0.76	0.09
Avoidance (+)	29	25.10	6.68	33.69	8.98	0.76	0.12
Avoidance (-)	26	27.19	6.12	36.58	7.47	0.74	0.10
Total	180	25.62	6.25	34.79	8.20	0.74	0.10

Note. SGO = Situational Goal Orientation; FS = Feedback Sign; “+” = Positive Feedback; “-” = Negative Feedback; SGO (FS) = Interacting conditions between situational GO and feedback sign.

Additional Analyses

Most of the findings in this study were not significant, so I was interested in examining whether there were confounding variables that might have affected the results of this study. There were two major follow-up questions that I would like to investigate. First, might the perception of feedback accuracy act as a confounding variable, hence influencing the relationship between the situational GO and feedback sign on the psychological states and behavioral performance? Krenn, Wurth, and Hergovich (2013) pointed out one flaw of the deceitful feedback is that people may doubt the credibility or accuracy of the given feedback. Consequently, people may choose to believe in themselves rather than the given feedback, reducing the effects of the feedback sign. Therefore, it is important to examine whether the results would be different if the perception about feedback accuracy was controlled. Second, would the feedback sign and goal orientation affect individual behavioral performance across the Trial 1 and Trial 2? Since the present study showed that situational GO and feedback sign did not cause significant differences between participants' behavioral performance, I wondered would it be the same case when the behavioral performance was examined from a mixed-subject ANOVA design (i.e., situational GO x feedback sign x trial).

Is the perception of the feedback accuracy a confounding variable? To answer whether the perception of feedback accuracy was a confounding variable, two separate 2-way Multivariate Analysis of Covariances (MANCOVAs) were run on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and behavioral performance (i.e., total score, attempts, and accuracy). The steps taken to run the MANCOVAs were similar to the MANOVAs I ran to test the original

hypotheses. The only difference was that I added in the perception of feedback accuracy as the covariates for the MANCOVAs.

While discussing the results, I compared the MANCOVA results to the respective MANOVA results to see if the perception of feedback accuracy was a confounding variable. If the perception of the feedback accuracy was a confounding variable, I would expect the MANCOVAs showed different findings from the respective MANOVA results. To avoid confusion, I referred the MANCOVA results as the additional-analysis results, whereas the respective MANOVA results as the study results. For example, when discussing the MANCOVA results (i.e., additional-analysis results) on the psychological states, the respective MANOVA results (i.e., study results) would be the one on the psychological states. Furthermore, to avoid redundancy, I summarized the results and only discussed in details if new findings were found in the additional-analysis results.

I first ran the 2-way MANCOVA with feedback sign and situational GO as the independent variables, psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) as the dependent variables, and the perception of feedback accuracy as the covariate. Then, I ran follow-up analyses (i.e., simple effect 1-way MANCOVAs and simple effect 1-way ANCOVAs) when a significant main effect or interaction effect was found. Overall, the additional-analysis results were not much different from the study results. First, when controlling for the perception of feedback accuracy, there were significant interaction effects between situational GO and feedback sign, significant main effects for the feedback sign, but no main effect for the situational GO on the psychological states. Second, when looking at the simple effect 1-way MANCOVAs, the feedback sign has main effects on the psychological states across the

situational GO; but the situational GO has no main effect on the psychological states across the feedback sign. Third, when looking at the simple effect 1-way ANCOVAs on situational GO, feedback sign only has main effect on the self-efficacy across the situational Go conditions. These additional-analysis results revealed no new findings from the study results. That said, the additional-analysis results suggested that the perception of feedback accuracy was unlikely a confounding variable that influenced the relationship between feedback sign and situational GO on the psychological states.

Next, I ran the 2-way MANCOVA with feedback sign and situational GO as the independent variables, the behavioral performance (i.e., total score, attempts, and accuracy) as the dependent variable, and the perception of feedback accuracy as the covariate. The 2-way MANCOVA revealed that, when controlling for the perception of the feedback accuracy, feedback sign and situational GO have neither main effects nor interaction effects on the behavioral performance. These findings were similar to the study results. In other words, the additional-analysis results suggested that the perception of feedback accuracy has no influence on the relationship of feedback sign and situational GO on the behavioral performance.

Would the feedback sign and goal orientation affect individual behavioral performance across the Trial 1 and Trial 2? To answer this question, three separate 3-way mixed-design ANOVAs were run with situational GO and feedback sign as the between-subject independent variables, the trials (Trial 1 and Trial 2) as the within-subject independent variable, and the total score, attempts, and accuracy (i.e., behavioral performance) as the dependent variables. The alpha was adjusted using the Bonferroni approach, $\alpha = .05/3 = .017$. All three mixed ANOVAs revealed that the trials have

significant main effects on the total score, $F(1, 174) = 152.32, p < .001, \text{Pillai's Trace} = .467, \text{partial } \eta^2 = .467, M_{\text{Trial 1}} = 20.81, SD_{\text{Trial 1}} = 6.62, M_{\text{Trial 2}} = 25.62, SD_{\text{Trial 1}} = 6.25$, attempts, $F(1, 174) = 142.49, p < .001, \text{Pillai's Trace} = .450, \text{partial } \eta^2 = .450, M_{\text{Trial 1}} = 29.88, SD_{\text{Trial 1}} = 8.21, M_{\text{Trial 2}} = 34.79, SD_{\text{Trial 1}} = 8.20$, and accuracy, $F(1, 174) = 29.93, p < .001, \text{Pillai's Trace} = .147, \text{partial } \eta^2 = .147, M_{\text{Trial 1}} = .69, SD_{\text{Trial 1}} = .10, M_{\text{Trial 2}} = .74, SD_{\text{Trial 1}} = .11$. Specifically, the performance (i.e., total score, attempts, and accuracy) in Trial 2 was significantly better than the performance in Trial 1. The results, however, showed neither 3-way interactions nor 2-way interactions on the total score, attempts, and accuracy. In addition, feedback sign and situational GO showed no main effects across all the mixed ANOVAs. These results suggested that the behavioral performance improved over the trials regardless of the feedback sign and situational GO.

CHAPTER IV: DISCUSSION

Summary

This study examined the main effects of situational GO and the relationship between feedback sign and situational GO on psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and behavioral performance (i.e., total score, attempts, and accuracy). The results revealed only feedback sign has main effects on self-efficacy, in which the self-efficacy increased following positive feedback and decreased following negative feedback. These findings were in line with social cognitive theory, in which the theory asserts that people tend to have higher self-efficacy when positive feedback was given than when negative feedback was given (Bandura, 1977).

Conversely, there were no main effects of the situational GO on the psychological states or behavioral performance. Moreover, the feedback sign and situational GO showed no interaction effects on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and behavioral performance (i.e., total score, attempts, and accuracy). I conducted additional analyses to investigate whether the perception of feedback accuracy might confound the results. The additional analyses showed that perception of feedback accuracy was not a confounding variable in this study. Possible explanations for the non-significant results were discussed in the following section.

Implications and Future Research

In the present study, even though most of the findings were insignificant, these non-significant results may provide new insights for future research. This section discusses the potential explanations for the non-significant findings and suggestions for future research.

First, the priming method used in the present study might not be robust enough to elicit psychological and behavioral differences among the different types of situational GO. Rawsthorne and Elliot (1999) mentioned that there were two types of priming for the situation performance GO: ego-involvement priming and normative-evaluation priming. The ego-involvement priming is the type of priming that involves linking people's personal attributes to their performance. For example, an ego-involvement performance goal priming will deceive participants that their performance in a game can reflect their intelligence, so they need to play well to indicate high intelligence. Conversely, normative-evaluation priming involves social comparisons. For instance, normative-evaluation performance goal priming will deceive the participants that their performance in the study will be compared to other participants, so they should try their best to perform. Rawsthorne and Elliot (1999) asserted that ego-involvement priming involves personal attributes, so conceptually this priming is more likely than normative-evaluation priming to elicit anxiety and the urge to perform. In the present study, I used the normative-evaluation priming, which might not be a strong priming method. Hence, the psychological and behavioral differences between situational learning GO and situational performance GO were not induced. Moreover, assuming the priming did not induce a sense of pressure to perform, participants might not be emotionally attached to the given feedback. That said, even if the participants got negative feedback, they would not experience those negative psychological states. Consequently, the situational GO did not interact with feedback sign in influencing off-task thoughts, negative affect, anxiety, and the behavioral performance. Future research may compare whether ego-involvement

priming and normative-evaluation priming interact differently with feedback sign in influencing the psychological states and performance.

Second, since the data were collected via an online setting, the absence of an authority figure throughout the experiment might cause the participants perceived the instructions (i.e., priming) and feedback sign as unimportant. The Milgram experiment showed that when there was the presence of authority, participants were more likely to follow the instructions (Milgram, 1965). In this present study, there was no one supervising the participants throughout the priming process and the trials. In the absence of an authority figure, the priming effects may have been weakened. Therefore, participants might not feel the pressure to follow the instructions (i.e., the situational goals to learn, to perform well, or to avoid performing poorly). Furthermore, the absence of an authority figure might take away the pressure of being judged, so participants did not feel the pressure to perform. Consequently, unlike previous studies (e.g., Cianci et al., 2010; Elliot & Harackiewicz, 1996) that had an authority figure during the experiment, the present study showed no interaction effects between the situational GO and feedback sign on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and the behavioral performance. Future research may investigate whether the presence of authority can make participants take the priming and feedback sign more seriously.

Third, a general situational GO priming might not be powerful enough to override the influences of the dispositional GO; subsequently, an incongruence between the dispositional and situational GO could have mitigated the impact of the experimental conditions. There are two theories that may help explain why a general situational

priming could be an issue in this study. First, goal setting theory asserted that setting a specific goal is more robust than a general goal (Latham & Locke, 1979). This theory may apply to situational GO priming method used in the present study. Various studies (e.g., Kozlowski & Bell, 2006; Seijts et al., 2004) have found that situational GO can override the effects of dispositional GO. Those studies have a common factor, in that the researchers used specific sets of situational GO priming. For example, Seijts et al. (2004) primed specific learning GO (e.g., “ ... to identify and implement 6 or more strategies ... ”) and performance GO (e.g., “ Past users of the simulation have shown a goal of achieving 21 percent market share ... your goal as the new CEO is to achieve 21 percent or more total market share ... ”). Their results revealed that specific situational GO overrode the effects of dispositional GO. Conversely, the priming in the present study was general (e.g., learn as much as you can, perform as well as you can). Thus, the general situational GO might have failed to overcome the effects of dispositional GO.

Second, the theory of situational strength stated that a strong situation can repress people’s personal attributes (Meyer, Dalal, & Hermida, 2010). According to the theory, a highly formalized setting tends to be a strong situation, whereas a lowly formalized setting tends to be a weak situation (Meyer et al., 2010). In the present study, participants were given a general priming through an online setting that was lowly formalized. Therefore, it was plausible that a weak situation was created, which failed to repress the participants’ dispositional GO. If that was the case, the incongruence between the situational and dispositional GO might have minimized the differences across the conditions. Furthermore, the incongruence of GO might also affect how the participants view the feedback sign. For instance, in a situational performance-avoidance GO

condition, a person with a dispositional learning GO might have conflicting emotions towards negative feedback. On the one hand, the dispositional learning GO may make the person feel excited because negative feedback indicates rooms for improvement; on the other hand, the situational performance-avoidance GO may demotivate the person because negative feedback indicates he has no talent in doing the task. Consequently, the person may rate their emotions as neutral. In short, the failure of situational GO in overriding the dispositional GO may explain why the interaction effects in this study were not significant. Future research may consider examining how the specificity and the situational strength of situational GO may interact with dispositional GO and feedback sign.

Lastly, the task may not have been viewed as meaningful to the participants. Consequently, the task may not have elicited the influences of situational GO and feedback sign. Dweck (1986) mentioned that people with a certain type of dispositional GO have a preference of task. For example, people with a dispositional learning GO prefer a task that helps them learn useful information, whereas people with a dispositional performance GO prefer a task in which they can greatly demonstrate competence. Because previous studies (e.g., Cianci et al., 2010a; Cianci et al., 2010b; Elliot & Harackiewicz, 1996) have shown, situational GO and dispositional GO tend to show similar effects, I assumed situational GO would be similar to dispositional GO in preferring certain tasks. In the current study, the task is to identify the number of word components in each item. Participants in the situational learning GO condition may perceive the game does not help them learn useful information; whereas those in the situational performance GO condition may perceive the game does not help them

demonstrate their competence. Hence, the main effects of situational GO were not shown through some of the psychological states nor through behavioral performance. Moreover, if the participants perceived the task as not meaningful, it was likely that they perceived the feedback sign as unimportant. This would help explain why the situational GO and feedback sign did not show significant interaction effects. Future research may manipulate the meaningfulness of the task to see if that changes the interaction effects of situational GO and feedback sign.

Limitations

The present study did not collect the data of participants' dispositional GO. As mentioned in the previous section, incongruence of situational and dispositional GO might have mitigated the findings of this study. If the information of dispositional GO were collected, I could have controlled for the effects of dispositional GO.

Also, the present study did not have a control group. It is plausible that the feedback sign and situational GO did have influences on the dependent variables, but the effects were not significant when compared to manipulated groups. Alternatively, it could be that feedback sign and situational GO do not interact with each other. Since there was no definite explanation for the results, the present study could not draw a firm conclusion. Future research may consider adding in a control group that does not receive any situational GO priming and feedback sign, then compare findings between the manipulated groups to the control group.

Furthermore, the number of trials was limited. Because the trials were time-limited and intense, I was concerned that anything more than two trials might cause participants to experience fatigue. Hence, I designed the experiment with only two trials.

As a reminder, participants only received feedback after they had completed the Trial 1 and some of the measures. That said, the effects of feedback sign could only be examined in the Trial 2. As a result, this design indirectly limited the present study to explore the effects of feedback sign over a longer period of time.

Additionally, there was a potential effect that limited the variance of behavioral performance. The trials in this study were time-limited, in which participants only had 40 seconds to finish the 20 items in each block (i.e., 120 seconds for 3 blocks, which have 60 items in total). This might create a limiting effect and could potentially explain why behavioral performance was approximately the same across conditions (see Table 5). In addition, according to the social cognitive theory, self-efficacy and performance are positively related (Bandura, 1977). Therefore, I expected self-efficacy in Trial 1 would relate to the behavioral performance (i.e., total score, attempts, and accuracy) in Trial 2. Because this was not part of the main investigation, the Results section did not specify the correlations between the Trial 1 self-efficacy and the Trial 2 behavioral performance. However, I examined the correlations post hoc. The analyses revealed that the Trial 1 self-efficacy was not related to the Trial 2 total score ($r = .06, p = .420$), attempts ($r = .104, p = .165$), and accuracy ($r = -.08, p = .285$). One plausible explanation for these results was that there were limiting effects that restricted the behavioral performance from correlating with self-efficacy.

Last, the generalizability and practical implications are limited. The participants in the present study were self-selected through MTurk. This limited the generalizability of the study towards populations other than MTurk workers. In addition, given the

insignificant results and the limitations of the study, the generalizability and practicality of the findings are restricted.

Conclusion

In conclusion, the present study found evidence that feedback sign affected self-efficacy, in which the self-efficacy increased following positive feedback and decreased following negative feedback. The present study, however, did not support the hypotheses that situational GO can affect behavioral performance and psychological states. Likewise, the study also rejected the hypotheses that feedback sign and situational GO have interaction effects on the psychological states (i.e., off-task thoughts, negative affect, anxiety, and self-efficacy) and behavioral performance. The insignificant results could be due to methodological reasons such as weak priming effects and unmeaningful task. Future research may consider exploring how different types of situational GO priming (e.g., specific vs. general, weak situation vs. strong situation, etc.) may interact with feedback sign in influencing psychological states and behavioral performance.

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APPENDICES

APPENDIX A: CONSENT FORM FOR MTURK PARTICIPANTS

Principal Investigator: Kin Leong Chan

Study Title: Are you good at word games? Test yourself!

Institution: Middle Tennessee State University

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully. If you have any concern about this study, feel free to contact me via kc5m@mtmail.mtsu.edu or my Faculty Advisor, Dr. Richard G. Moffett III at (615) 898 – 2686 or Rick.Moffett@mts.edu.

Your participation in this research study is voluntary. You are also free to withdraw from this study at any time. In the event new information becomes available that may affect the risks or benefits associated with this research study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation in this study.

For additional information about giving consent or your rights as a participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

1. Purpose of the study:

To investigate different people's ability in a word decomposition (i.e., morphological decomposition) game. The game requires one to accurately divide a word into its component parts: prefix, root, and suffixes (also known as word components, or morphemes).

2. Description of procedures to be followed and approximate duration of the study:

In this study, you will go through one training practice and two rounds of word game. Within each word game, you will be able to test your word decomposition ability. Throughout the study, you will be asked to complete some word games and then answer a set of questions (e.g., opinions, attitudes, etc.). This study should take about 20 minutes. There are limited risks for participating in this study but participants will benefit from the experience of helping develop scientific research regarding people's word decomposition ability.

3. Expected costs:

n/a

4. Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study:

There are no known risks if you decide to participate in this research study.

5. Compensation in case of study-related injury:

MTSU will not provide compensation in the case of study related injury.

6. Anticipated benefits from this study:

- a) The potential benefit to science and humankind that may result from this study is understanding how word decomposition ability can be varied across people.
- b) The potential benefit to you from this study is that you may request for the results and know your word decomposition ability. In addition, you will receive \$0.50 in total for completing the whole study.

7. Alternative treatments available:

n/a

8. Compensation for participation:

You will receive \$0.50 in total for completing the whole study.

9. Circumstances under which the Principal Investigator may withdraw you from study participation:

- a) If you are not proficient in English
- b) If you are under 18 years old.

10. What happens if you choose to withdraw from study participation:

Your participation in this study is voluntary. You may choose not to participate in this research study at any time without penalty. If you quit or refuse to participate, the benefits to which you are otherwise entitled will not be affected.

11. Contact Information. If you should have any questions about this research study or possible injury, please feel free to contact **Kin Leong Chan** at **kc5m@mtmail.mtsu.edu** or my Faculty Advisor, **Dr. Richard G. Moffett III** at **(615) 898 – 2686** or Rick.Moffett@mtsu.edu.

12. Confidentiality. Every attempt will be made to see that your study results are kept confidential. A copy of the records from this study will be securely stored in the Department of Psychology for at least five (5) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the MTSU IRB, and personnel particular to this research (Dr. Richard G. Moffett III and Kin Leong Chan) have access to the study records. Your responses, informed consent document, and records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above.

13. STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY

By clicking "Yes, I agree to participate in this study," it indicates that I have read this informed consent document. I understand each part of the document and I freely and voluntarily choose to participate in this study.

(If you do not wish If you do not wish to participate in the research study, please decline participation by choosing "No, I do not agree to participate in this study")

APPENDIX B: TASK INSTRUCTIONS

I. *Training Instructions.*

In the present study, you will first go through training on a word game. The word game essentially tests your word decomposition ability (i.e., morphological decomposition). This is the ability to accurately divide a word into its component parts: prefix, root, and suffixes (also known as word components, or morphemes). Consider the following examples:

WANDER has 1 word components: "WANDER"

WANDERER has 2 word components: "WANDER" + "ER"

WANDERERS has 3 word components: "WANDER" + "ER" + "S"

In the following training trial, you will need to identify the number of word component(s) in each word. You have to get at least 10 questions correct before proceeding to the next round of word game; otherwise, you will be given a second training trial.

II. *Round One Instructions (Trial 1).*

There are two rounds of the word game and this is the Round One! You will stay on this instruction page for 90 seconds before being able to proceed to the game. Therefore, please carefully read the instructions below.

In the following round, there are 3 pages with 20 words on each page – 60 words in total. You will have 40 seconds to identify the number of word components for the 20 words on each page. In other words, you will have 40 seconds for page 1, 40 seconds for page 2, and 40 seconds for page 3. Please note that you may not have enough time to finish all 60 words.

As a reminder, word decomposition is the ability to accurately divide a word into its component parts: prefix, root, and suffixes (also known as word components, or morphemes). Consider the following examples:

WANDER has 1 word components: "WANDER"

WANDERER has 2 word components: "WANDER" + "ER"

WANDERERS has 3 word components: "WANDER" + "ER" + "S" ... [continue with the Situational GO priming, see Appendix C]

III. Round 2 Instructions (Trial 2).

This is the Round Two, which is also the last round of the word game! You will stay on this instruction page for 90 seconds before being able to proceed to the game. Therefore, please carefully read the instructions below.

In the following round, there are 3 pages with 20 words on each page – 60 words in total. You will have 40 seconds to identify the number of word components for the 20 words on each page. In other words, you will have 40 seconds for page 1, 40 seconds for page 2, and 40 seconds for page 3. Please note that you may not have enough time to finish all 60 words.

As a reminder, word decomposition is the ability to accurately divide a word into its component parts: prefix, root, and suffixes (also known as word components, or morphemes). Consider the following examples:

WANDER has 1 word components: "WANDER"

WANDERER has 2 word components: "WANDER" + "ER"

WANDERERS has 3 word components: "WANDER" + "ER" + "S" ... [continue with the Situational GO priming, see Appendix C]

APPENDIX C: SITUATIONAL GO PRIMING CONDITIONS

I. *Situational learning GO condition*

“[continued from Task instructions, see Appendix B] ... Most fluent adults can accurately identify word component(s) in seconds and **the ability is relatively flexible for all people**. In other words, **word decomposition ability can be improved through practicing**. In the coming round, we will assess your word decomposition ability. Your results will be analyzed in real time and compared to the results of previous participants. **Your goal throughout the next round is to learn how to identify the number of word component(s) in a word as accurately as possible. You should view this as an opportunity to learn and develop your word decomposition ability.**” (adapted from Cianci et al., 2010b).

II. *Situational performance-prove GO condition*

“[continued from Task instructions, see Appendix B] ... Most fluent adults can accurately identify word components in seconds and **the ability is relatively fixed for all people**. In other words, **word decomposition ability can hardly be improved through practicing**. In the coming round, we will assess your word decomposition ability. Your results will be analyzed in real time and compared to the results of previous participants. **Your goal throughout the next round is to identify the number of word component(s) in a word as accurately as possible. You should view this as an opportunity to show that you are good in word decomposition.**” (adapted from Cianci et al., 2010b).

III. *Situational performance-avoidance GO condition*

“[continued from Task instructions, see Appendix B] ... Most fluent adults can accurately identify word components in seconds and **the ability is relatively fixed for all people**. In other words, **word decomposition ability can hardly be improved through practicing**. In the coming round, we will assess your word decomposition ability. Your results will be analyzed in real time and compared to the results of previous participants. **Your goal throughout the next round is to avoid inaccurately identifying the number of word component(s) in a word. You should view this as an opportunity to show that you are not poor in word decomposition.**” (adapted from Cianci et al., 2010b).

APPENDIX D: WORD DECOMPOSITION ITEMS

I. Below is the demonstration of the design of the word decomposition trial

1. How many word components in “activities”

- 1
- 2
- 3
- 4

2. How many word components in “titanium”

- 1
- 2
- 3
- 4

II. The complete list of Trial 1 word decomposition items

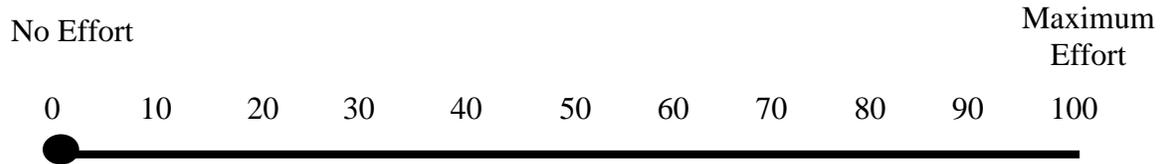
Item No.		Item No.	
1	activities	31	aluminium
2	titanium	32	charisma
3	landowners	33	substandard
4	missionary	34	bookkeepers
5	tobacco	35	vaccination
6	submarine	36	easiest
7	vigorous	37	outsiders
8	criticized	38	enterprise
9	avocado	39	citizenship
10	absolute	40	disgraced
11	enlightened	41	congratulate
12	childishly	42	uncertain
13	marvelous	43	disinterested
14	westerners	44	inactive
15	periodically	45	headache
16	considerable	46	graphically
17	discontinue	47	carelessness
18	feverishly	48	significance
19	bridesmaids	49	manageable
20	restaurant	50	renegade
21	relativistic	51	disclaimers
22	unreasonable	52	membership
23	blackened	53	broadcasters
24	interactions	54	camouflage
25	existence	55	deformed
26	distinguish	56	division
27	umbrella	57	boomerang
28	coworkers	58	compromise
29	swimmers	59	homecomings
30	traveler	60	fisherman

III. The complete list of Trial 2 word decomposition items

Item No.		Item No.	
1	unbutton	31	submerge
2	obituary	32	residue
3	traders	33	reviewers
4	wanderer	34	poisonous
5	sweetener	35	curiosity
6	movement	36	magnolia
7	interpret	37	decision
8	activated	38	courageous
9	replacements	39	zeppelin
10	unarmed	40	debatable
11	unrealistic	41	favorably
12	nonsensical	42	falsehood
13	frightening	43	nonentity
14	lieutenant	44	abandon
15	prehistoric	45	editorials
16	ability	46	weakening
17	taxpayers	47	international
18	personalized	48	upgraded
19	mercenary	49	showmanship
20	nationalists	50	reformers
21	lavender	51	motivations
22	hurricane	52	outrageously
23	statehood	53	instrument
24	torpedo	54	rightfully
25	leadership	55	undoubtedly
26	photographic	56	apparatus
27	tricycles	57	unbreakable
28	molasses	58	unbelievers
29	regretful	59	barracuda
30	additionally	60	suggestion

APPENDIX E: SELF-REPORT EFFORT

Instructions: Please drag the pointer to indicate the percentage of effort you have spent in the word game you just completed



APPENDIX F: OFF-TASK THOUGHTS

Instructions: Please rate the following statements using the scale shown below.

	Never	.	.	.	Constantly
1. I took “mental breaks” during the game.	<input type="radio"/>				
2. I daydreamed while doing the game.	<input type="radio"/>				
3. I lost interest in the game for short periods.	<input type="radio"/>				
4. I thought about other things that I have to do.	<input type="radio"/>				
5. I wondered about how my performance compared with others.	<input type="radio"/>				
6. I thought about the difficulty of the game.	<input type="radio"/>				
7. I thought about how I can perform better.	<input type="radio"/>				
8. I thought about how well I was performing.	<input type="radio"/>				
9. I thought about how poorly I was performing.	<input type="radio"/>				

Adapted from Kanfer, R., Ackerman, P. L., Murtha, T. C., Dugdale, B., & Nelson, L. (1994). Goal setting, conditions of practice, and task performance: A resource allocation perspective. *Journal of Applied Psychology*, 79(6), 826-835. doi:10.1037/0021-9010.79.6.826

APPENDIX G: NEGATIVE AFFECT

Instructions: Please rate the following statements using the scale shown below.

	Never	.	.	.	Constantly
1. I became frustrated with my inability to improve my performance.	<input type="radio"/>				
2. I thought about how poorly I was doing.	<input type="radio"/>				
3. I got mad at myself during the game.	<input type="radio"/>				

Adapted from Kanfer, R., Ackerman, P. L., Murtha, T. C., Dugdale, B., & Nelson, L. (1994). Goal setting, conditions of practice, and task performance: A resource allocation perspective. *Journal of Applied Psychology*, 79(6), 826-835. doi:10.1037/0021-9010.79.6.826

APPENDIX H: ANXIETY

Instructions: A number of statements that people have used to describe themselves are given below. Read each statement and then rate on the scale to indicate how you feel right now. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

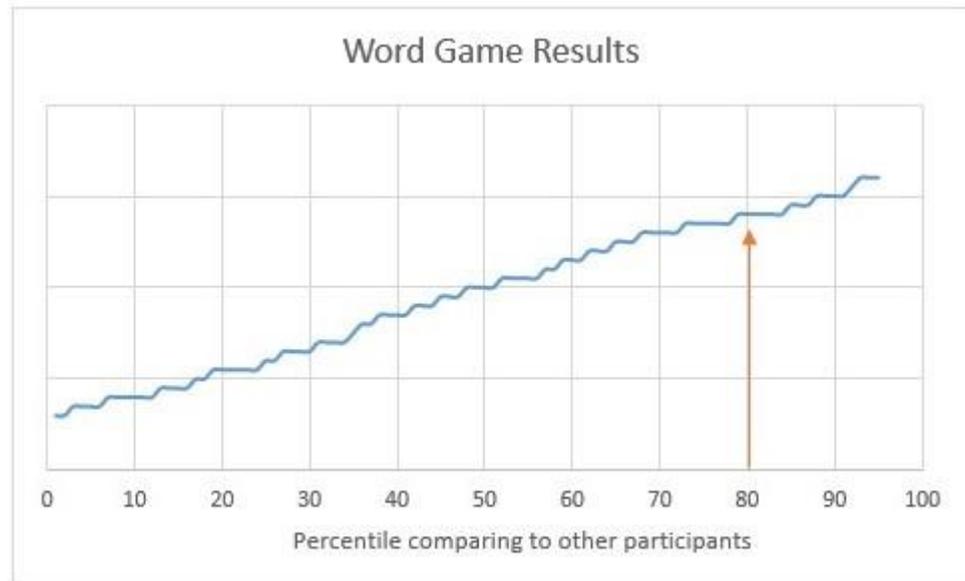
	Not at all	Somewhat	Moderately	Very Much
1. I feel calm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am tense.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am relaxed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I feel content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am worried.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Marteau, T. M., & Bekker, H. (1992). The development of a six-item short-form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI). *British Journal of Clinical Psychology*, *31*(3), 301-306. doi:10.1111/j.2044-8260.1992.tb00997.x

APPENDIX I: FEEDBACK SIGN

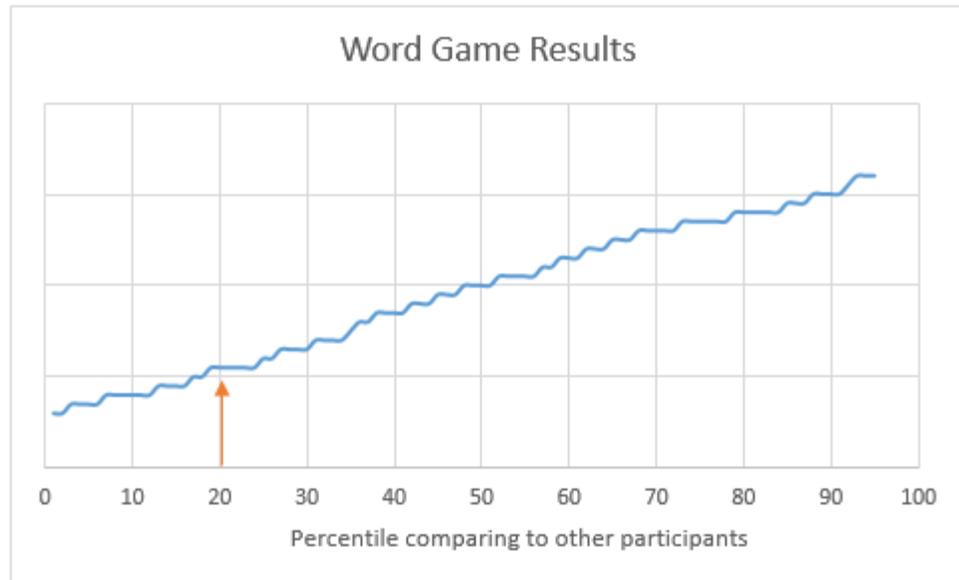
I. Positive feedback condition

“Your word decomposition ability is good. It is at the top **20%** (rounded to the nearest 5%), indicating that your word decomposition ability is better than **80%** of the people who have previously participated in this word game.”



II. Negative feedback condition

“Your word decomposition ability is poor. It is at the bottom **20%** (rounded to the nearest 5%), indicating that your word decomposition ability is poorer than **80%** of the people who have previously participated in this word game.”



APPENDIX J: WORD DECOMPOSITION ANSWERS

I. The complete list of Trial 1 word decomposition answers

Item No.	Trial 1 Items	No. of Word Components	Word Components
1	activities	4	ACT + IVE + ITY + S
2	titanium	1	TITANIUM
3	landowners	4	LAND + OWN + ER + S
4	missionary	2	MISSION + ARY
5	tobacco	1	TOBACCO
6	submarine	2	SUB + MARINE
7	vigorous	2	VIGOR + OUS
8	criticized	3	CRITIC + ISE + ED
9	avocado	1	AVOCADO
10	absolute	1	ABSOLUTE
11	enlightened	4	EN + LIGHT + EN + ED
12	childishly	3	CHILD + ISH + LY
13	marvelous	2	MARVEL + OUS
14	westerners	4	WEST + ERN + ER + S
15	periodically	4	PERIOD + IC + AL + LY
16	considerable	2	CONSIDER + ABLE
17	discontinue	2	DIS + CONTINUE
18	feverishly	3	FEVER + ISH + LY
19	bridesmaids	4	BRIDE + S + MAID + S
20	restaurant	1	RESTAURANT
21	relativistic	4	RELATE + IVE + IST + IC
22	unreasonable	3	UN + REASON + ABLE
23	blackened	3	BLACK + EN + ED
24	interactions	4	INTER + ACT + ION + S
25	existence	2	EXIST + ENCE
26	distinguish	1	DISTINGUISH
27	umbrella	1	UMBRELLA
28	coworkers	4	CO + WORK + ER + S
29	swimmers	3	SWIM + ER + S
30	traveler	2	TRAVEL + ER
31	aluminium	1	ALUMINUM
32	charisma	1	CHARISMA
33	substandard	2	SUB + STANDARD
34	bookkeepers	4	BOOK + KEEP + ER + S
Item No.	Trial 1 Items	No. of Word Components	Word Components

35	vaccination	3	VACCINE + ATE + ION
36	easiest	3	EASE + Y + EST
37	outsiders	4	OUT + SIDE + ER + S
38	enterprise	1	ENTERPRISE
39	citizenship	2	CITIZEN + SHIP
40	disgraced	3	DIS + GRACE + ED
41	congratulate	1	CONGRATULATE
42	uncertain	2	UN + CERTAIN
43	disinterested	3	DIS + INTEREST + ED
44	inactive	3	IN + ACT + IVE
45	headache	2	HEAD + ACHE
46	graphically	4	GRAPH + IC + AL + LY
47	carelessness	3	CARE + LESS + NESS
48	significance	3	SIGN + IFY + ANCE
49	manageable	2	MANAGE + ABLE
50	renegade	1	RENEGADE
51	disclaimers	4	DIS + CLAIM + ER + S
52	membership	2	MEMBER + SHIP
53	broadcasters	4	BROAD + CAST + ER + S
54	camouflage	1	CAMOUFLAGE
55	deformed	3	DE + FORM + ED
56	division	2	DIVIDE + ION
57	boomerang	1	BOOMERANG
58	compromise	1	COMPROMISE
59	homecomings	4	HOME + COME + ING + S
60	fisherman	3	FISH + ER + MAN

II. The complete list of Trial 2 word decomposition answers

Item No.	Trial 2 Items	No. of Word Components	Word Components
1	unbutton	2	UN + BUTTON
2	obituary	1	OBITUARY
3	traders	3	TRADE + ER + S
4	wanderer	2	WANDER + ER
5	sweetener	3	SWEET + EN + ER
6	movement	2	MOVE + MENT
7	interpret	1	INTERPRET
8	activated	4	ACT + IVE + ATE + ED
9	replacements	4	RE + PLACE + MENT + S
10	unarmed	3	UN + ARM + ED
11	unrealistic	4	UN + REAL + IST + IC
12	nonsensical	4	NON + SENSE + IC + AL
13	frightening	3	FRIGHT + EN + ING
14	lieutenant	1	LIEUTENANT
15	prehistoric	3	PRE + HISTORY + IC
16	ability	2	ABLE + ITY
17	taxpayers	4	TAX + PAY + ER + S
18	personalized	4	PERSON + AL + ISE + ED
19	mercenary	1	MERCENARY
20	nationalists	4	NATION + AL + IST + S
21	lavender	1	LAVENDER
22	hurricane	1	HURRICANE
23	statehood	2	STATE + HOOD
24	torpedo	1	TORPEDO
25	leadership	3	LEAD + ER + SHIP
26	photographic	3	PHOTO + GRAPH + IC
27	tricycles	3	TRI + CYCLE + S
28	molasses	1	MOLASSES
29	regretful	2	REGRET + FUL
30	additionally	4	ADD + ITION + AL + LY
31	submerge	2	SUB + MERGE
32	residue	1	RESIDUE
33	reviewers	4	RE + VIEW + ER + S
34	poisonous	2	POISON + OUS
35	curiosity	2	CURIOUS + ITY
36	magnolia	1	MAGNOLIA
37	decision	2	DECIDE + ION

Item No.	Trial 1 Items	No. of Word Components	Word Components
38	courageous	2	COURAGE + OUS
39	zeppelin	1	ZEPPELIN
40	debatable	2	DEBATE + ABLE
41	favorably	3	FAVOR + ABLE + Y
42	falsehood	2	FALSE + HOOD
43	nonentity	2	NON + ENTITY
44	abandon	1	ABANDON
45	editorials	4	EDIT + OR + IAL + S
46	weakening	3	WEAK + EN + ING
47	international	3	INTER + NATION + AL
48	upgraded	3	UP + GRADE + ED
49	showmanship	3	SHOW + MAN + SHIP
50	reformers	4	RE + FORM + ER + S
51	motivations	4	MOTIVE + ATE + ION + S
52	outrageously	4	OUT + RAGE + OUS + LY
53	instrument	1	INSTRUMENT
54	rightfully	3	RIGHT + FUL + LY
55	undoubtedly	4	UN + DOUBT + ED + LY
56	apparatus	1	APPARATUS
57	unbreakable	3	UN + BREAK + ABLE
58	unbelievers	4	UN + BELIEVE + ER + S
59	barracuda	1	BARRACUDA
60	suggestion	2	SUGGEST + ION

APPENDIX K: SELF-EFFICACY

Instructions: This section contains eight questions asking you to describe **how confident YOU are** that you can handle the challenges of performing another round of the word game. Please rate the following statements using the scale shown below.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I believe I can meet the challenges of the game.	<input type="radio"/>				
2. I am confident in my understanding of how to perform the game.	<input type="radio"/>				
3. I am confident I can make decisions under ambiguous conditions for the game.	<input type="radio"/>				
4. I am certain that I can manage the requirements of the game.	<input type="radio"/>				
5. I believe I will do well on the game if the workload is increased.	<input type="radio"/>				
6. I am confident that I can cope if the game becomes more complex.	<input type="radio"/>				
7. I believe I can develop methods to handle changing aspects of the game.	<input type="radio"/>				
8. I am certain I can cope with different game responsibilities competing for my time.	<input type="radio"/>				

Kozlowski, S. W., Gully, S. M., Brown, K. G., Salas, E., Smith, E. M., & Nason, E. R. (2001). Effects of training goals and goal orientation traits on multidimensional training outcomes and performance adaptability. *Organizational Behavior and Human Decision Processes*, 85(1), 1-31. doi:10.1006/obhd.2000.2930

APPENDIX L: ADDITIONAL MEASURES

I. Self-report satisfaction

Instructions: Please indicate your sense of satisfaction.

	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
1. How satisfied are you in terms of learning how to perform better?	<input type="radio"/>				
2. How satisfied are you in terms of showing that you are good at the word game?	<input type="radio"/>				
3. How satisfied are you in terms of showing that you are not poor at the word game?	<input type="radio"/>				

II. Perception of feedback accuracy

I perceived the given feedback was accurate.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<input type="radio"/>				

III. Manipulation checks

1. My assigned goal for all the word games was to
 - learn and develop my word decomposition ability.
 - show that I am good in word decomposition.
 - show that I am not poor in word decomposition.

2. The feedback I received indicated that I performed:
 - Better than 90% of the other participants
 - Better than 80% of the other participants
 - Better than 70% of the other participants
 - Better than 60% of the other participants
 - at an average level
 - Poorer than 60% of the other participants
 - Poorer than 70% of the other participants
 - Poorer than 80% of the other participants
 - Poorer than 90% of the other participants

APPENDIX M: DEMOGRAPHIC QUESTIONS

1. What is your age?
 - 18 – 21 years
 - 22 – 25 years
 - 26 – 30 years
 - 30 years
 - Prefer not to answer

2. What is your gender?
 - Male
 - Female
 - Prefer not to answer

3. What is your ethnicity?
 - White or Caucasian
 - Hispanic or Latino
 - Black or African American
 - Native American or American Indian
 - Asian/Pacific Islander
 - Other
 - Prefer not to answer

4. What is your education level?
 - Less than high school
 - Some high school
 - High school completion or General Education Degree
 - Some college or associate's degree
 - Bachelor's degree
 - Master's Degree
 - Doctorate's Degree
 - Other
 - Prefer not to answer

APPENDIX N: REACTIONS TO THE STUDY

You are nearly finished. Please answer the questions on this page. Your responses to these questions **will NOT** influence your compensation for this study. Please answer honestly.

1. Did you take this study seriously, or did you click through the responses?
 - Just clicked through
 - Took the study seriously

2. Should we include your data in our analyses?
 - My data should **NOT** be included in your analyses
 - My data should be included in your analyses

3. Why should we **NOT** include your data in our analyses?
 - I was not really paying attention
 - I just clicked randomly
 - I did not understand the task/questions
 - I did not really know what I was doing
 - I just skimmed through the questions
 - Other: _____

4. Finally, what do you think the purpose of this study is?

APPENDIX O: DEBRIEF

FEEDBACK AND SITUATIONAL GOAL ORIENTATION:
HOW IT AFFECTS PSYCHOLOGICAL STATES AND BEHAVIORS

Thank you for your participation in this research! I would like to discuss with you in more detail about the study you just participated in and to explain exactly what I was trying to study.

I apologize that it was required for me to deceive you about the present study. In the present study, you were told that the study was about word games that test word decomposition ability. However, that was not the purpose of the study. The real purpose of the present study is to investigate how people react – psychologically and behaviorally – when they are given different types of goals and feedback. For example, research has shown that when people have a goal to perform well and they are provided with positive feedback, their performance tends to increase (Cianci et al., 2010). If you would like to learn more about situational goal orientation and feedback, please see below for the reference of Cianci et al. (2010).

During the experiment, participants – including you – were given different goals (i.e., to learn, to show high performance, and to avoid poor performance) and false feedback. **In other words, the results of the word decomposition ability we showed to you is not real.**

I did not tell participants everything at the beginning of the study because I did not want to influence participants' responses. If I had told participants the results are not real, there are different goals, and the real purpose of the study, then participants' reactions would not be genuine. **If other people knew the true purpose of the study, it might affect how they behave/answer questions, so I am asking you not to share the information we just discussed.**

If you would like more information about this study or your rights as a participant, please feel free to contact me, Kin Leong Chan, at kc5m@mtmail.mtsu.edu or my faculty advisor, Dr. Richard G. Moffett III, at (615) 898 – 2686 or Rick.Moffett@mtsu.edu. The results from this study will not be immediately available, but arrangements can be made for you to obtain the results of the study once they become available. Thank you for your time and patience in helping me with this project.

Kin Leong Chan
Middle Tennessee State University (MTSU)
Graduate Student, Industrial & Organizational Psychology
kc5m@mtmail.mtsu.edu

References

Cianci, A. M., Schaubroeck, J. M., & McGill, G. A. (2010). Achievement goals, feedback, and task performance. *Human Performance*, 23(2), 131-154.
doi:10.1080/08959281003621687

Now that you have learned about the true purpose of this study, will you still provide us your consent to include your data in our analyses?

- Yes
- No

APPENDIX P: IRB APPROVAL

IRB

INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129



IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE

Tuesday, January 17, 2017

Investigator(s): Kin Leong Chan; Rick Moffett
Investigator(s') Email(s): c5m@mtmail.mtsu.edu; Rick.Moffett@mtsu.edu
Department: Psychology

Study Title: FEEDBACK AND SITUATIONAL GOAL
ORIENTATION:HOW IT AFFECTS PSYCHOLOGICAL
STATES AND BEHAVIOR

Protocol ID: **17-2101**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXPEDITED** mechanism under 45 CFR 46.110 and 21 CFR 56.110 within the category (4) *Collection of data through noninvasive procedures*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	APPROVED for one year from the date of this notification	
Date of expiration	1/31/2018	
Participant Size	500	
Participant Pool	Adults 18+	
Exceptions	None	
Restrictions	None	
Comments	None	
Amendments	Date	Post-approval Amendments

This protocol can be continued for up to THREE years (**1/31/2020**) by obtaining a continuation approval prior to **1/31/2018**. Refer to the following schedule to plan your annual project reports and be aware that you may not receive a separate reminder to complete your continuing reviews. Failure in obtaining an approval for continuation will automatically result in cancellation of this protocol. Moreover, the completion of this study **MUST** be notified to the Office of Compliance by filing a final report in order to close-out the protocol.

Continuing Review Schedule:

Reporting Period	Requisition Deadline	IRB Comments
First year report	1/31/2018	None
Second year report	1/31/2019	None
Final report	1/31/2020	None

IRBN001 Version 1.3
Office of Compliance

Revision Date 03.06.2016 Institutional Review Board
Middle Tennessee State University

The investigator(s) indicated in this notification should read and abide by all of the post-approval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website](#). Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident. Amendments to this protocol must be approved by the IRB. Inclusion of new researchers must also be approved by the Office of Compliance before they begin to work on the project.

All of the research-related records, which include signed consent forms, investigator information and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

[Click here](#) for a detailed list of the post-approval responsibilities. More information on expedited procedures can be found [here](#).

APPENDIX Q: IRB AMENDMENT APPROVAL

IRB INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129



IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE

Thursday, February 09, 2017

Investigator(s): Kin Leong Chan (Student PI) and Rick Moffett (FA)
Investigator(s) Email(s): c5m@mtmail.mtsu.edu; Rick.Moffett@mtsu.edu
Department: Psychology

Study Title: Feedback and situational goal orientation: How it affects
psychological states and behavior?
Protocol ID: 17-2101

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXPEDITED** mechanism under 45 CFR 46.110 and 21 CFR 56.110 within the category (4) *Collection of data through noninvasive procedures*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	APPROVED for one year
Date of expiration	1/31/2018
Participant Size	500 (FIVE HUNDRED)
Participant Pool	Adults (18+) through MTSU Psychology research pool, Mechanical Turk, and other means listed on file
Exceptions	Approved to conduct the study online
Restrictions	Mandatory informed consent
Comments	Updated on 02/09/2017

Amendments	Date	Post-approval Amendments
	02.09.2017	<ol style="list-style-type: none"> 1. Permitted to alter the consent form to reflect the change in duration of the intervention 2. Approved to revise the "extra credit" listed in the informed consent to comply with MTSU Psychology Research Pool standard policy 3. Revision to the "training trials" to be used only for training has been approved 4. Change to the training trial to reflect item 3 is permitted 5. Additional questions proposed for the survey to evaluate the participants' reactions to the study are allowed 6. Collection of MTurk ID to verify if the participant is a real person or a "web robot"/"internet bots" and to process participation compensation <p>[It is noted that MTurk IDs are confidential and the researchers may at no time will have access to this information]</p>

IRBN001 Version 1.3
Office of Compliance

Revision Date 03.06.2016 Institutional Review Board
Middle Tennessee State University

This protocol can be continued for up to **THREE** years (**1/31/2020**) by obtaining a continuation approval prior to **1/31/2018**. Refer to the following schedule to plan your annual project reports and be aware that you may not receive a separate reminder to complete your continuing reviews. Failure in obtaining an approval for continuation will automatically result in cancellation of this protocol. Moreover, the completion of this study **MUST** be notified to the Office of Compliance by filing a final report in order to close-out the protocol.

Continuing Review Schedule:

Reporting Period	Requisition Deadline	IRB Comments
First year report	1/31/2018	None
Second year report	1/31/2019	None
Final report	1/31/2020	None

The investigator(s) indicated in this notification should read and abide by all of the post-approval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website](#). Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident. Amendments to this protocol must be approved by the IRB. Inclusion of new researchers must also be approved by the Office of Compliance before they begin to work on the project.

All of the research-related records, which include signed consent forms, investigator information and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol

application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

[Click here](#) for a detailed list of the post-approval responsibilities. More information on expedited procedures can be found [here](#).