Department of Psychological Science

The Influence of Praise Based on Fear of Failure

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The Effect of Praise on Students Based on Their Fear of Failure

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Abstract

In certain situations, failure may induce a feeling of academic inability or helplessness in students, which may lead to students dropping out of college (a noticeable problem in the United States). According to the quadripolar model of achievement motivation (De Castella, Byrne, & Covington, 2013), students can be grouped according to their fear of failure. Presumably, students in certain failure orientations are susceptible to negative outcomes associated with failure (e.g., those with high fear of failure may inherently be more negatively affected than those with low fear of failure). One known method of alleviating feelings of failure is by increasing self-worth and motivation by providing students with praise. I examined the effects of two forms of praise, ability praise (e.g., "You must be naturally gifted at these kinds of problems!") and effort praise (e.g., "You must have worked really hard on these problems!"), on students as it relates to their fear of failure. Results showed no significant interaction between type of praise and fear of failure. However, there was a noticeable trend of effort praise being slightly more effective than ability or no praise for students with low fear of failure.

The Effect of Praise on Students Based on Their Fear of Failure

College dropout rates are a significant issue all over the world, but especially in America, which has the lowest college completion rate in the developed world. In fact, close to a third of all incoming college students do not complete their degree (Weissmann, 2014). This high rate is related to a number of issues, including having a job, raising a family, requiring remedial classes that lengthen the time to degree, and high tuition costs. These external variables are widely acknowledged as affecting degree completion, but internal variables are often overlooked. One of these internal variables is the experience of failure. Multiple studies suggest that the experience of failure may lead to performance deficits in future work (Thayer, 1973; Witkowski & Stiensmeier-Pelster, 1998). Students who are "failing" in school, in being unable to achieve adequate grades, could see school as too difficult or even pointless, which may then lead to dropping out. If failure contributes to high dropout rates, then it is crucial to analyze the mechanism behind failure, how students process failure, and how to alter their response to failure. I will now review relevant prior research about the impact of failure on college students.

Failure can be investigated through the quadripolar model of achievement motivation (De Castella, Byrne, & Covington, 2013). The quadripolar model is a two-dimensional framework to represent the interplay of fear of failure and orientation toward success (see Figure 1). This framework contains four groups: optimists, overstrivers, self-protectors, and failure acceptors. To make an analogy, imagine a student getting ready to take an exam. An optimist (high success orientation and low fear of failure) would be a student who wants to get an A on the exam, has studied extensively for the exam, and is confident that he or she will earn an A on the exam. An overstriver (high success orientation and high fear of failure) would be a student who wants to get an A on the exam, has studied extensively for the exam, but is afraid of failing the exam and

may have low confidence in his or her ability. A self-protector (low success orientation and high fear of failure) would be a student who may not care about his or her performance on the exam, and has such a high fear of failure that he or she may avoid studying altogether and enter the exam with unrealistically low expectations (e.g., "I will be lucky to get a D on this exam"). A failure acceptor (low success orientation and low fear of failure) would be a student who is convinced that he or she will fail regardless of his or her behavior, and therefore develops apathy toward the exam. Failure acceptors often protect themselves from failure by withdrawing from the academic setting. The characteristics of each group are crucial to understand, as they deeply affect performance in school. In fact, failure acceptors tend to have the poorest academic outcomes in school as compared to the other three groups (De Castella et al., 2013). Due to the adverse affects of fear of failure on behavior, as evident with self-protectors and failure acceptors, it is possible that fear of failure plays a larger role in school performance than does success orientation. Thus, I primarily focus on fear of failure as it relates to performance in this experiment.

Martin, Marsh, and Debus (2001) and De Castella et al. (2013) both investigated the quadripolar model as it relates to a number of factors: defensive pessimism, self-handicapping, and learned helplessness. Defensive pessimism occurs when students set unrealistically low expectations of themselves in order to avoid the disappointment of unmet expectations. For example, a student may expect to get an F on a test so that he is not disappointed when he receives a D (i.e., "I did better than I thought I would"). Self-handicapping occurs when students create premeditated excuses for failure. For example, a student may choose not to study for an exam so that when she fails, she can blame a lack of preparation for her failure instead of a lack of ability (i.e. "I performed poorly because I didn't feel like studying, not because I'm bad at the

class"). Self-handicapping and defensive pessimism are self-preservation tactics to avoid feeling "stupid" or "incapable." Finally, learned helplessness is felt by students who experience repetitive failure until they ultimately stop putting forth effort, with the belief that success is unattainable (i.e. "There's no point in even trying anymore"). Learned helplessness is a preservation of one's self-worth by ceasing effort because one feels that striving for success will only lead to more failure and embarrassment. Of interest, note that individuals with defensive pessimism and self-handicapping both have a high fear of failure, which is the primary focus of the current experiment.

Martin et al. (2001) and De Castella et al. (2013) found that self-handicapping and defensive pessimism are associated with self-protectors, and learned helplessness is associated with failure acceptors. The relatedness of these factors makes sense, as self-protectors, failure acceptors, and overstrivers have a need to protect their self-worth. In contrast to these three groups (which typically have a low-self worth), optimists are not seemingly motivated by a need to preserve their self-worth, most likely due to an intrinsic confidence in their ability to achieve success. They do not avoid or accept failure; they invite failure as a challenge and are eager to face it due to their high self-worth and achievement motivation. Since optimists have the best academic outcomes (De Castella et al. 2013), it is crucial to determine how to increase students' sense of self-worth in the academic setting so that they deal with failure in a productive manner.

One potential method for increasing self-worth and achievement motivation is to provide praise. Mueller and Dweck (1998) investigated this in a study that manipulated praise for ability and praise for effort. In their study, participants were praised for either ability or effort following the completion of an initial easy problem set. Then, participants were given a very difficult follow-up set, which was designed to induce failure. Finally, participants were given another

easy problem set. Those praised for effort performed significantly better on the final set of problems than did those praised for ability. Mueller and Dweck (1998) speculate that this was because those praised for ability went on to measure their intelligence based on their performance. Then, when they performed poorly on the second set, they felt that their poor performance was indicative of low intelligence. Subsequently, they performed relatively worse on the final set compared to the effort praise group. The study by Mueller and Dweck (1998) indicates that different forms of praise can affect future performance on subsequent tasks. The current question of interest is whether or not specific types of praise are more effective depending upon whether someone has a high or low fear of failure.

There are reasons to expect that praise may influence different people in different ways. Those with a high fear of failure (e.g., overstrivers and self-protectors) may fear that poor performance reflects low intelligence and ability in them. Praising effort would likely be quite productive for them compared to praising ability. In contrast, it is less clear if those with a low fear of failure (e.g., optimists and failure acceptors) will be affected by a certain type of praise. In fact, they may not respond to either form of praise. Optimists are typically already confident in their abilities and may not require praise to motivate them. Failure acceptors are typically very low in confidence and motivation, and therefore may not find encouragement in any sort of praise. As follows, it is possible that those with varying degrees of fear of failure will react differently to various forms of praise.

To address this question, the present study investigated ability and effort praise as they relate to fear of failure. I provided participants with three different sets of a problem-solving task. The first set consisted of 10 easy problems (success set), after which participants either received ability praise (praising their natural ability to solve problems), effort praise (praising

their work ethic), or no praise at all (control condition). The second set of problems consisted of

2 difficult problems and 8 impossible problems (failure set). Finally, the third set of problems

consisted of 10 easy problems (to evaluate their ability to recover from failure). After

participants attempted to solve the problems, they completed questionnaires, which grouped

them into failure orientations (high or low). My hypotheses are as follows: (1) Participants with

high fear of failure will perform better on the third set of problems when given effort praise

rather than ability praise, and (2) participants with low fear of failure will not have a difference

in performance on the third set of problems when given effort or ability praise.

Method

Participants

Participants in the experiment were students from Northern Kentucky University. Prior to

recruiting participants, I conducted a power analysis using G*Power 3.1.9.2 (Faul, Erdfelder,

Buchner, & Lang, 2009) to determine sample size. The following parameters were used in the

power calculation: effect size estimate of .2, alpha level of .05, correlation among measures of .5,

number of groups equal to 6 (3 types of praise x 2 failure orientations), and number of

measurements set to 2 (RAT performance for Trial 1 versus Trial 3). Using these parameters, in

order to obtain a power level of .90 for a repeated-measures ANOVA examining a within-

between interaction, a sample size of 114 participants would be required. Note that this

recommended sample size assumes an equal distribution amongst groups; however, the number

of participants in low and high fear of failure may not be equal. Therefore, I collected a sample

size of 182 participants to account for variations in the distribution of participants. I excluded

any noncompliant participants (e.g. typing gibberish on all the trials), participants who wished to

be excluded (e.g., technical difficulties), participants who had completed the experiment before,

or participants who did not finish the experiment. After removing these participants from the data, I had 100 participants remaining.

Materials

Within this test, I included 30 Remote Associates Triad (RAT) questions (see Appendix A). On each trial, three words were presented simultaneously (e.g., "Sore, Shoulder, Sweat") and participants were instructed to find a related fourth word that connects the original three words (e.g., "Cold"). Of the 30 RAT problems used, 20 were easy to solve, 2 were difficult to solve, and 8 were impossible to solve (the impossible problems have no known solutions). I also administered several surveys to evaluate students' academic attitudes. The Achievement Goal Questionnaire (AGQ; Elliot & McGregor, 2001) (see Appendix B) measured participants' orientation toward success, and the Performance Failure Appraisal Inventory - Short Form (PFAI-S; Conroy, Willow, and Metzler, 2002) (see Appendix C) measured participants' fear of failure.

I administered a demographic survey to collect information on age, race/ethnicity, gender, GPA, and year in school. The experiment ended with a debriefing that informed participants of the actual purpose of the study.

Procedure

The test was administered online via SONA systems. First, participants read and agreed to a consent form outlining the experimental procedure. Then, participants were presented with a screen explaining the purpose of the test: to assess their ability to complete RAT problems. Participants were not told that the difficulty of the problems will vary and that their response to failure is being assessed. Following that screen, a brief explanation of RAT problems along with

an example RAT problem was presented. Then, participants clicked a button to begin solving problems.

During the first phase of the experiment, participants were given 10 easy RAT problems. Each problem was presented on the screen one at a time. The screen had a text box under the question where participants typed their answers, and a "Submit" button that they clicked when ready to submit their answer. Participants had a minimum of ten seconds and a maximum of thirty seconds to solve each problem. After thirty seconds, the screen automatically moved on to the next problem. The goal of this phase was for everyone to have at or near 100% performance. Immediately following completion of the first phase, participants in the experimental group were given one of two forms of praise: (1) effort praise - "You must have really worked hard on these problems. You solved more problems correctly than most people!" or (2) ability praise - "You must be naturally gifted at these kinds of problems. You solved more problems correctly than most people!" Participants in the control group received no feedback. All participants were shown a message at the bottom - "Please click the button below to proceed to the next set of problems." - and a "Next" button.

In the second phase, participants were given 10 problems: 8 impossible RAT problems (i.e., 3 words that do not have a connecting 4th word) and 2 difficult RAT problems. The purpose behind including 2 difficult problems with the 8 impossible problems was to prevent participants from figuring out that the problems are fake. Presumably, they are less likely to suspect that the rest of the problems are not solvable if they find solvable problems in the same set. Questions were presented in the same format as in the first phase (one at a time) and with a thirty second time limit. The goal of this phase was to have all participants experience failure, so that I can examine how they handle failure in the final phase. Immediately following completion of the

second phase, participants in the experimental group were uniformly told: "Your performance was much worse on these problems." Participants in the control group received no feedback. All participants were shown a message at the bottom - "Please click the button below to proceed to the final set of problems." - and a "Next" button.

In the third phase, participants were again given 10 easy RAT problems in the same format and time limit as the previous two sets. Although this set of problems were of identical difficulty to those presented during the first phase, these problems were novel problems that the participant had not seen before in the experiment. Upon completion of the problems, participants were shown a message - "You have completed the problem solving phase of the experiment. Next, you will answer general questions about yourself. Please click below to proceed." - and a "Next" button.

In the final phase of the experiment, participants filled out the AGQ and the PFAI-S (see Appendix B and C). These items assessed success orientation and fear of failure, respectively. When finished, participants clicked "Next" to proceed to the demographic questions. When finished, participants clicked "Next" to view the final screen, where I thanked and debriefed the participants.

Results

Based on the responses to the PFAI-S, participants were grouped into high fear of failure or low fear of failure (De Castella et al., 2013). I excluded any noncompliant participants (e.g. typing gibberish on all the trials), participants who wish to be excluded (e.g., technical difficulties), participants who have completed the experiment before, or participants who do not finish the experiment. The PFAI-S consists of 5 items assessing failure orientation. I combined scores from all 5 items to create a composite fear of failure metric for each participant. Then,

congruent with De Castella et al. (2013), I computed values 1 standard deviation above and below the mean composite PFAI-S score for each participant to categorize them as high or low fear of failure. Due to our limited sample size, I also computed values 0.5 standard deviations above and below the mean composite PFAI-S score for fear of failure, in order to include more participants in the data analysis. For a final set of analyses and to maximize the number of contributing participants, I also categorized participants as high or low fear of failure based on whether or not their mean composite PFAI-S score was above or below the average composite PFAI-S score. To evaluate RAT performance as a function of praise and fear of failure, several repeated-measures ANOVAs were conducted.

1 SD above the mean (high fear of failure)

A 2 (RAT performance: Phase 1 versus Phase 3) x 3 (Type of Praise: Ability, Effort, or Control) repeated-measures ANOVA was conducted for high fear of failure based on 1 standard deviation above the mean composite PFAI-S score. RAT performance was significantly different from Phase 1 to Phase 3, $F(1,15) = 58.93$, $MSE = 0.02$, $p < .001$, $\eta^2 = .79$. There was no significant difference among the three praise groups, $F(2,15) = .320$, $MSE = 0.03$, $p = .731$, $\eta^2 = .041$. There was no significant interaction between RAT performance as a function of type of praise, $F(2,15) = .245$, $MSE = .004$, $p = .786$, $\eta^2 = .007$ (see Figure 2).

1 SD below the mean (low fear of failure)

A 2 (RAT performance: Phase 1 versus Phase 3) x 3 (Type of Praise: Ability, Effort, or Control) repeated-measures ANOVA was conducted for low fear of failure based on 1 standard deviation below the mean composite PFAI-S score. RAT performance was significantly different from Phase 1 to Phase 3, $F(1,11) = 20.781$, $MSE = 0.021$, $p < .001$, $\eta^2 = 0.654$. There was no significant difference among the three praise groups, $F(2,11) = 1.297$, $MSE = 0.02$, $p = 0.31$, $\eta^2 =$

0.191. There was no significant interaction between RAT performance as a function of type of praise, $F(2,11) = 0.383$, $MSE = 0.007$, $p = 0.69$, $\eta^2 = 0.065$ (see Figure 3).

0.5 SD above the mean (high fear of failure)

A 2 (RAT performance: Phase 1 versus Phase 3) x 3 (Type of Praise: Ability, Effort, or Control) repeated-measures ANOVA was conducted for high fear of failure based on 0.5 standard deviations above the mean composite PFAI-S score. RAT performance was significantly different from Phase 1 to Phase 3, $F(1,39) = 67.31$, $MSE = 0.018$, $p < .001$, $\eta^2 = 0.633$. There was no significant difference among the three praise groups, $F(2,39) = 2.847$, $MSE = 0.034$, $p = 0.07$, $\eta^2 = 0.127$. There was no significant interaction between RAT performance as a function of type of praise, $F(2,39) = 0.327$, $MSE = 0.006$, $p = 0.723$, $\eta^2 = 0.016$ (see Figure 4).

0.5 SD below the mean (low fear of failure)

A 2 (RAT performance: Phase 1 versus Phase 3) x 3 (Type of Praise: Ability, Effort, or Control) repeated-measures ANOVA was conducted for low fear of failure based on 0.5 standard deviations below the mean composite PFAI-S score. RAT performance was significantly different from Phase 1 to Phase 3, $F(1,27) = 29.1$, $MSE = 0.023$, $p < .001$, $\eta^2 = 0.519$. There was no significant difference among the three praise groups, $F(2,27) = 2.796$, $MSE = 0.028$, $p = 0.079$, $\eta^2 = 0.172$. There was no significant interaction between RAT performance as a function of type of praise, $F(2,27) = 1.046$, $MSE = 0.024$, $p = 0.365$, $\eta^2 = 0.072$ (see Figure 5).

Above the mean (high fear of failure)

A 2 (RAT performance: Phase 1 versus Phase 3) x 3 (Type of Praise: Ability, Effort, or Control) repeated-measures ANOVA was conducted for high fear of failure based on 0 standard deviations above the mean composite PFAI-S score. RAT performance was significantly different from Phase 1 to Phase 3, $F(1,49) = 77.825$, $MSE = 0.019$, $p < .001$, $\eta^2 = 0.614$. There

was no significant difference among the three praise groups, $F(2,49) = 0.775$, $MSE = 0.041$, $p = 0.267$, $\eta^2 = 0.052$. There was no significant interaction between RAT performance as a function of type of praise, $F(2,49) = 1.356$, $MSE = 0.019$, $p = 0.446$, $\eta^2 = 0.031$ (see Figure 6).

Below the mean (low fear of failure)

A 2 (RAT performance: Phase 1 versus Phase 3) x 3 (Type of Praise: Ability, Effort, or Control) repeated-measures ANOVA was conducted for low fear of failure based on 0 standard deviations below the mean composite PFAI-S score. RAT performance was significantly different from Phase 1 to Phase 3, $F(1,44) = 43.015$, $MSE = 0.025$, $p < .001$, $\eta^2 = 0.494$. There was no significant difference among the three praise groups, $F(2,44) = 1.208$, $MSE = 0.038$, $p = 0.309$, $\eta^2 = 0.052$. There was no significant interaction between RAT performance as a function of type of praise, $F(2,44) = 1.485$, $MSE = 0.037$, $p = 0.238$, $\eta^2 = 0.063$ (see Figure 7).

Summary

Overall, there were no significant group differences or interactions except for RAT performance changing from Phase 1 to Phase 3. RAT performance always decreased from Phase 1 to Phase 3, which suggests that participants were giving up. Despite there being no significant interactions, participants with a low fear of failure seemed to perform slightly better when given effort praise than when given ability or no praise. Participants with a high fear of failure saw no noticeable difference in performance based on type of praise.

General Discussion

In this experiment, I had participants complete a set of trials and evaluated their performance as a function of fear of failure. I found no significant effects except for a significant decline in RAT performance. However, I noticed a trend of those with a low fear of failure responding best to effort praise, and those with a high fear of failure not responding to any form

of praise. This is contrary to my original hypothesis, which stated that those with a high fear of failure would respond best to effort praise, and those with a low fear of failure would respond equally to all forms of praise. I believed that those with a high fear of failure would be the most insecure about their performance, and therefore the most receptive to praise of their performance.

There are a few possible reasons for why results were the opposite of what was expected. Perhaps those with a high fear of failure were so focused on their performance that they simply did not care about outside feedback on their hard work or skills. Or perhaps those with a low fear of failure are more receptive to any kind of feedback on their performance, and therefore were able to take praise more seriously and be affected by it. Further research would be necessary to identify what exactly caused the difference in responses between failure orientations.

Limitations

My experiment had some limitations. One of these was the small sample size; though I initially had as many participants as I intended to gather, I had to exclude nearly half of them due to various issues (e.g., those who had computer problems, have done the experiment before, or did not finish the experiment). Another issue may have been participant fatigue; since they solved thirty problems that each took up to thirty seconds (15 minutes total), they may have had trouble concentrating near the end. A third issue is that participants may have been distracted while completing the experiment. Since the test was administered remotely, there was no way to monitor the participants and ensure that they stay focused. Finally, since the test occurred online rather than in-person, participants receiving praise may not have taken it as seriously as they would have if someone personally praised them in real life.

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High Fear of Failure

Self-Protectors

High Self-handicapping
High Defensive Pessimism
Low Helplessness

Overstrivers

Low Self-handicapping
High Defensive Pessimism
Low Helplessness

Low Success
Orientation

High Success
Orientation

Failure Acceptors

Low Self-handicapping
Low Defensive Pessimism
High Helplessness

Optimists

Low Self-handicapping
Low Defensive Pessimism
Low Helplessness

Low Fear of Failure

Figure 1. The quadripolar model as a function of fear of failure and success orientation. Adapted by De Castella, Byrne, and Covington (2013) from *Making the Grade: A Self-Worth Perspective on Motivation and School Reform* (p. 40), by M. Covington, 1992, Cambridge, England: Cambridge University Press. Copyright 1992 by Cambridge University Press.
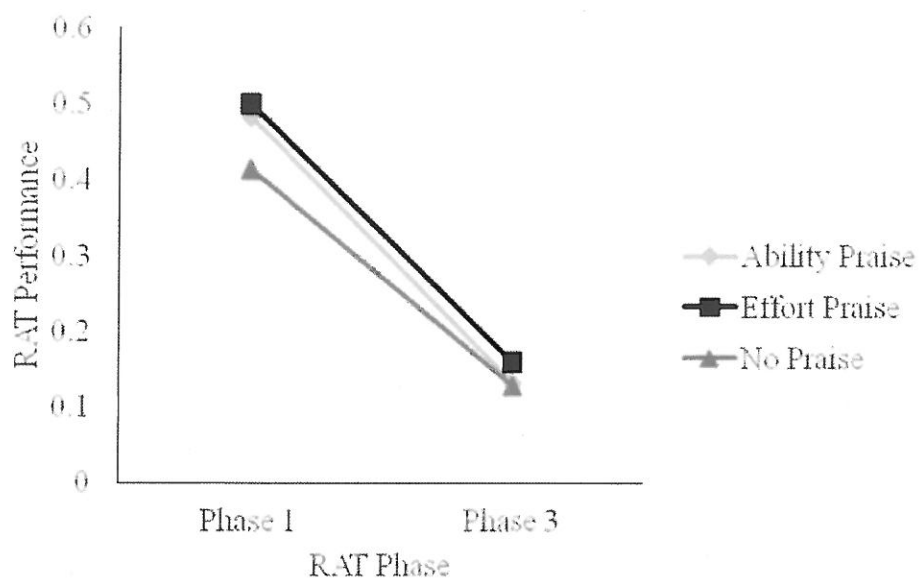
Figure 2. Mean RAT Performance during Phase 1 and Phase 3 as a function of type of praise for high fear of failure (1 SD above the mean composite PFAI-S score).
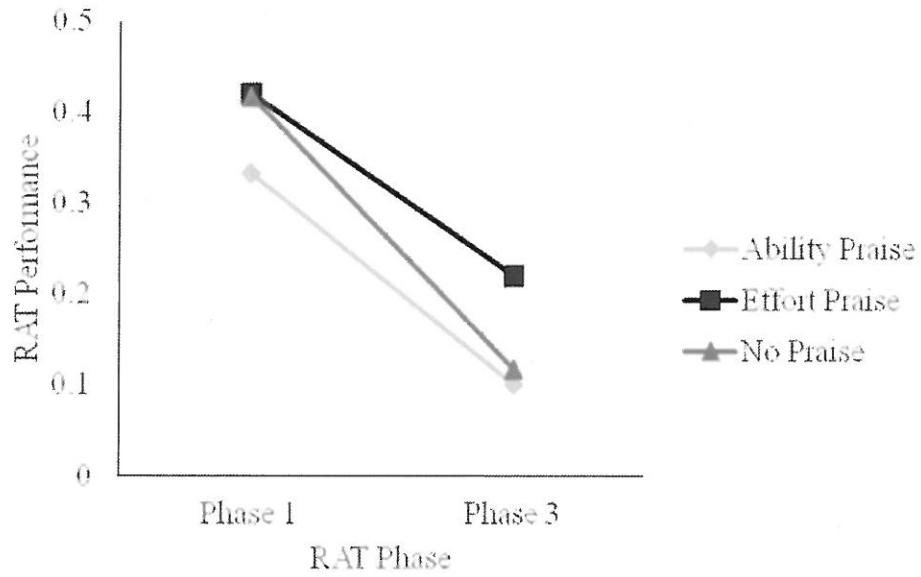
Figure 3. Mean RAT Performance during Phase 1 and Phase 3 as a function of type of praise for low fear of failure (1 SD below the mean composite PFAI-S score).
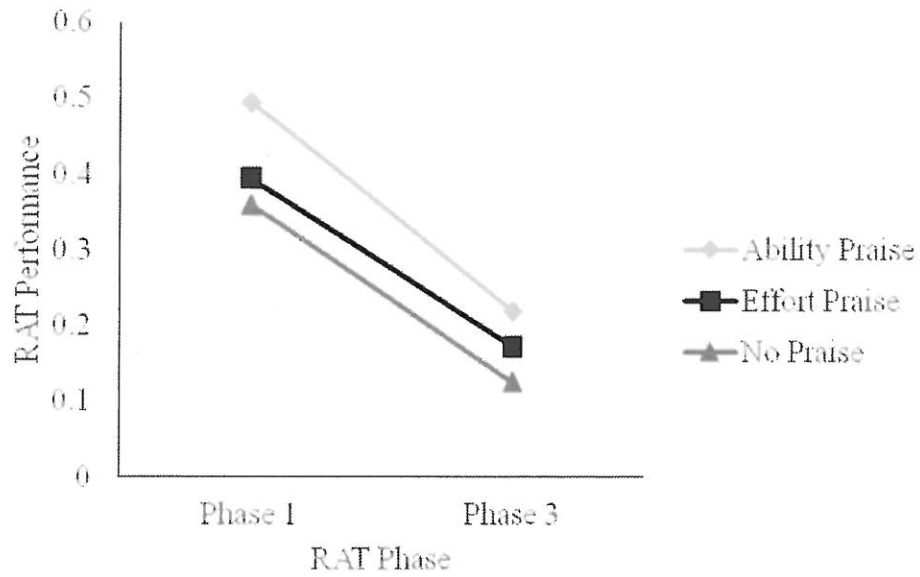
Figure 4. Mean RAT Performance during Phase 1 and Phase 3 as a function of type of praise for high fear of failure (0.5 SD above the mean composite PFAI-S score).
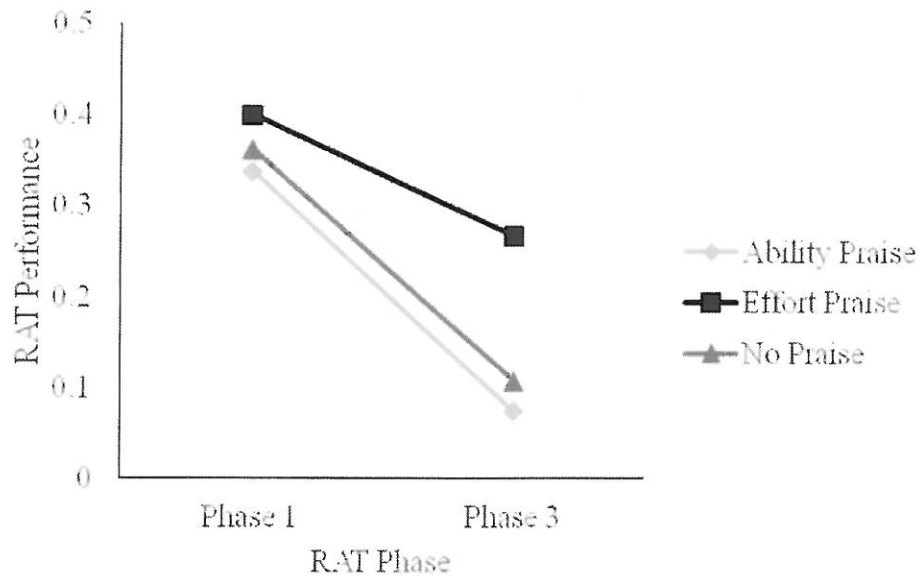
Figure 5. Mean RAT Performance during Phase 1 and Phase 3 as a function of type of praise for low fear of failure (0.5 SD below the mean composite PFAI-S score).
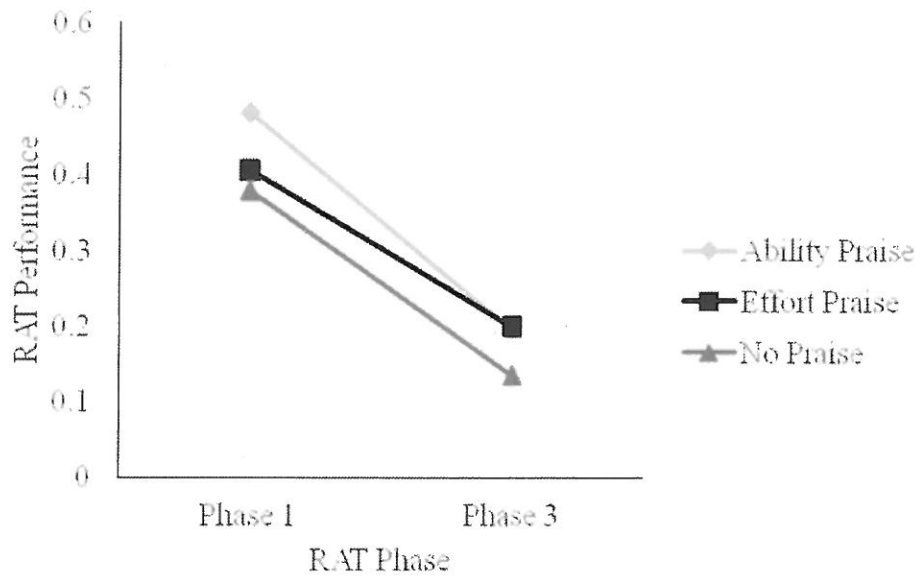
Figure 6. Mean RAT Performance during Phase 1 and Phase 3 as a function of type of praise for high fear of failure (0 SD above the mean composite PFAI-S score).
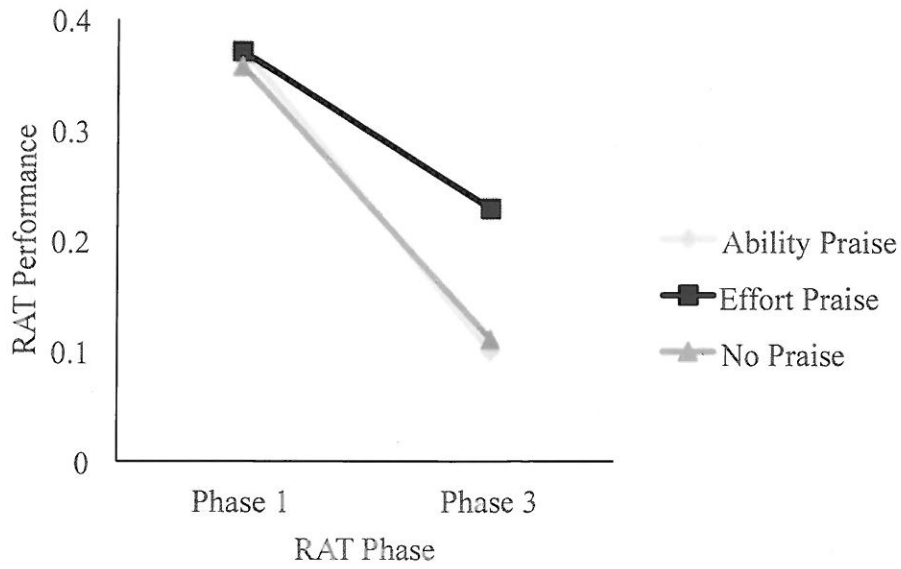
Figure 7. Mean RAT Performance during Phase 1 and Phase 3 as a function of type of praise for low fear of failure (0 SD below the mean composite PFAI-S score).

Appendix A

Remote Associate Triads

	Cue	Solution
Phase 1	Cream Skate Water	ICE
	Loser Throat Spot	SORE
	Jump Kill Bliss	JOY
	Magic Plush Floor	CARPET
	Note Dive Chair	HIGH
	Stick Light Birthday	CANDLE
	Rock Times Steel	HARD
	Stop Petty Sneak	THIEF
	Thread Pine Pain	NEEDLE
	Zone Still Noise	QUIET
Phase 2	Falling Actor Dust	STAR
	Seat Light Word	--
	Air Box Back	--
	Broken Clear Eye	GLASS
	Sound Pen Sole	--
	Pant Pole Sky	--
	Bow Wire Wall	--
	Letter Strap Food	--
	Touch Nail Flower	--
	Bottle Sight Old	--
Phase 3	Strike Same Tennis	MATCH
	Athletes Web Rabbit	FOOT
	Board Magic Death	BLACK
	Lapse Vivid Elephant	MEMORY
	Puss Tart Spoiled	SOUR
	Cloth Sad Out	SACK
	Cotton Bathtub Tonic	GIN
	Stalk Trainer King	LION
	Bump Throat Sum	LUMP
	Blank White Lines	PAPER

Appendix B

Achievement Goal Questionnaire (Elliot & McGregor (2001)

It is important to me to do better than other students.
It is important to me to do well compared to others in my classes.
My goal in class is to get a better grade than most of the students.
I want to learn as much as possible in class.
It is important for me to understand the content of my courses as thoroughly as possible.
I desire to completely master the material presented in my subjects.

Note. A 1 (Strongly Disagree) to 5 (Strongly Agree) scale was used.

Appendix C

Performance Failure Appraisal Inventory - Short Form (Conroy, Willow, & Metzler, 2002)

When I am failing, I am afraid that I might not have enough talent.

When I am failing, it upsets my "plan" for the future.

When I am not succeeding, people are less interested in me.

When I am failing, important others are disappointed.

When I am failing, I worry about what others think about me.

Note. A 1 (Strongly Disagree) to 5 (Strongly Agree) scale was used.