

The Effect of Encouragement on Defensive Pessimism as an Anxiety Amplifier

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## Abstract

The past literature indicates that performance is disrupted for defensive pessimists by encouragement. The goals of this research were to replicate this phenomenon, and then examine the mechanisms underlying it. Specifically, does the encouragement alleviate the anxiety defensive pessimists harness, and thus leave them unmotivated, or does it increase the pressure to perform well and make them overly anxious in a way that interferes with performance? Participants both high and low on defensive pessimism were randomly assigned to one of 2 conditions: an encouragement condition and a control condition. Participants were given three sets of 15 anagrams to solve in between a series of measures designed to assess their appraisals and emotions during the task. The phenomenon of encouragement disrupting performance for defensive pessimists was not replicated. However, there was evidence suggesting that the 4 negative items of the DPQ were a more reliable and valid indicator of defensive pessimism than the full scale. Therefore the reduced scale was used for analyses. Non-predicted findings using this reduced scale are described. Discussion centers on the possible reasons the original effect was not replicated, and advances suggestions for improving research on the defensive pessimism construct.

## The Effect of Encouragement on Defensive Pessimism as an Anxiety Amplifier

The cognitive processes that guide our actions and interpretations of situations are a large part of what makes up human personality. Processes such as defense mechanisms help to shape how humans handle stressful situations. Defense mechanisms focus on negative affect and protection of the self. These mechanisms affect how we study, handle family member's sicknesses, tackle errands, deal with confrontations, strategize to obtain personal goals, etc.

The particular mechanism I am interested in pursuing is Defensive Pessimism. Defensive Pessimism is a cognitive strategy in which people set low expectations and reflect extensively on possible (negative) outcomes prior to a situation, event, or performance. Defensive pessimism seems to be different than normal strategies for obtaining goals in that it actually elicits and then harnesses anxiety in an attempt to avoid failure and the (presumably) more negative emotions that failure would evoke. Therefore, the defensive pessimism and negative thinking are not symptoms to be cured, but rather effective ways of managing the situation. In a sense, it is a type of coping, where thinking about these negative outcomes and increasing their anxiety motivates them to work hard. As they approach their goals they keep their anxiety from interfering by focusing on the steps needed to obtain goals and avoid failure, and the emotional implications of failure. Psychological experimentation in this has examined a number of different aspects of defensive pessimism, usually compared against Strategic Optimism, where people set high expectations, feel calm, and avoid reflecting in order to do better at a task (Norem & Illingworth, 1993) Studies have demonstrated the actions of defensive pessimists to be useful.

Norem and Cantor believe that defensive pessimists harness their anxiety over risky situations in order to control it so performance is not impaired (Norem & Cantor, 1986). The main

purpose of their experiment was to test the hypothesis that those prescreened for defensive pessimism, relative to those identified as strategic optimists, would set predictably different expectations and exhibit predictably different anxiety levels before the start of the task and would not perform significantly different on the task. In their experiment they first prescreened the participants for using the strategy of Defensive Pessimism, and after used the Mandler-Sarason Test Anxiety Questionnaire to determine the level of anxiety the participants felt prior to the task. In the experiment the observed results were strongly in line with the investigators' predictions. The defensive pessimists gave lower predictions of performance, scored significantly higher on anxiety, yet, still had equivalent test results compared to the optimists. In a second experiment, the investigators set out to demonstrate that not only does the high anxiety and low expectations not hurt the performance of defensive pessimists, but instead it facilitates it. They wanted to see if interference with their strategy (harnessing anxiety and negative thinking) leads to decreased performance for subjects accustomed to using the defensive-pessimism strategy. They used encouragement as their interfering mechanism, which was interesting because it should interfere with the defensive pessimists tendencies to set low expectations, but on the surface appears to serve to help individuals improve their performance. Participants were prescreened for using defensive pessimism or optimism and then placed into encouragement and non-encouragement conditions. They were asked to give their GPA and to write a paragraph stating their thoughts before the night of a big test. In the encouragement condition, the experimenter looked at their GPA before starting them on the task and indicated that the subjects would probably do very well on the experimental task. Participants were then asked to do a tracing-puzzle task and an anagram task. In the non-encouragement condition, participants did the same tasks, but without the encouraging comment prior to the task. The results indicated that encouraged pessimists

performed significantly worse than did non-encouraged pessimists, thus supporting Norem's belief that defensive pessimism is a useful strategy that people use in risky situations.

Many situations that people encounter represent both the possibility for success and the possibility for failure. The possibility for failure can be interpreted as a risky situation where people use differing strategies to deal with the situation or avoid having the situation become debilitating or immobilizing. In one study (Norem & Illingworth, 2003), mood was assessed. Participants were prescreened for defensive pessimism and strategic optimism, then brought into the study session and a brief inventory was given to assess their naturally occurring mood. They were then asked to work on 70 mental arithmetic problems for 10 minutes. The findings indicate that for defensive pessimists, there was a significantly greater negative mood than with strategic optimists. Naturally occurring positive mood was somewhat negatively related to performance for defensive pessimists, but was unrelated to mood for strategic optimists. They also found that in this study, unlike previous ones, that defensive pessimists did not perform as well as strategic optimists. They suggest that this performance difference might possibly be attributable to a gender difference, because the male/female ratio for defensive pessimists (18 males and 35 females) was much lower than for strategic optimists, (22 males and 29 females), and the authors observed that college women often under-perform on math tests relative to college men.

These studies suggest that defensive pessimism is an interesting coping strategy in that it employs negative affect to encourage good performance. The observation that encouragement disrupts performance for defensive pessimists is particularly interesting. However, there appear to be a couple of gaps in the literature that I attempt to address in the present literature. First, the mechanism by which encouragement disrupts the performance of defensive pessimists is somewhat unclear at present, and at least two possibilities suggest themselves. First, in line with

the findings above, suggesting that defensive pessimists perform better when they are experiencing negative affect than when they are experiencing positive affect, it could be that the encouragement alleviates their anxiety, and leaves them relatively unmotivated. A contrasting possibility is that the encouragement, by undermining the defensive pessimists low performance expectations puts added pressure on them, which makes them overly anxious in a way that undermines their performance. Thus a primary goal of the present research is to replicate the disruptive effects of encouragement for defensive pessimists, but to do so in a way that allows me to differentiate between these two possibilities. To accomplish these goals, I will draw upon appraisal theory (e.g., Smith & Lazarus, 1990) to closely examine the emotional processes underlying these debilitating effects of encouragement.

In particular, I will engage defensive pessimists in a challenging task under conditions of encouragement or a no-encouragement control condition, and will assess variables derived from appraisal theory (motivational relevance, or how important the situation is to the person; motivational congruence, or how desirable or undesirable the situation is to the person; problem-focused coping potential, or how able the person believes themselves to be to succeed at the task; emotion-focused coping potential, or how able the person feels to deal with the situation however it turns out [associated with anxiety] as well as the emotions of anxiety, challenge/determination [associated with high levels of engagement in the task] and resignation [associated with low levels of engagement in the task]; Smith & Lazarus, 1990). Observation of these variables should allow me to differentiate between the two alternative explanations for the deleterious effects of encouragement for defensive pessimists. If the encouragement serves as a safety signal that lowers their motivation, under conditions of encouragement, and relative to strategic optimists, defensive pessimists should report relatively low levels of importance and undesirability,

relatively high levels of both problem- and emotion-focused coping potential, along with relatively low levels of anxiety, and challenge-determination. On the other-hand if the encouragement increases the performance pressure on defensive pessimists to a debilitating degree, for this encouraged defensive pessimists we should observe elevated levels of appraised emotional relevance and undesirability, accompanied by relatively low levels of both problem- and emotion-focused coping potential, accompanied by high levels of anxiety and resignation, as well as low levels of challenge/determination.

A second goal associated with this research is to examine the dispositional correlates of defensive pessimism. In the existing research there have been very few attempts to relate defensive pessimism to other dispositional characteristics, such as self-esteem, trait anxiety, dispositional optimism and the like. Knowing how defensive pessimism relates to such important dispositional characteristics seems important for understanding this style of coping with academic stress, and its likely long-term costs and benefits to long-term adaptive functioning. Therefore in the present study, in addition to examining the affective processes associated with the effects of encouragement on coping in defensive pessimists, I will also examine how defensive pessimism as an individual difference variable relates to other important dispositions and aspects of the self.

## Methods

### *Participants/Design*

Participants were 60 undergraduates (19 male and 41 female) from Vanderbilt University who participated in the research as partial fulfillment of a course research requirement. In this experiment the participants were tested individually using a 3 (defensive pessimism -- high vs. medium vs. low) by 2 (expectations -- encouragement vs. no manipulated expectations control

condition) quasi-experimental design. They were first randomly assigned to one of two experimental conditions: an encouragement condition, in which they were led to expect that they would do well, and a control condition, in which they were not given any experimenter-provided expectations regarding their performance. After the experiment, participants completed a battery of personality measures (described below) including the Defensive Pessimism Questionnaire (DPQ, Norem & Cantor, 1986), and were assigned to the appropriate defensive pessimism condition based on their scores on this questionnaire. Because the assignment to condition using this instrument proved to be more complicated than anticipated, we defer discussion of this assignment to the description of the DPQ, in the measures section, below.

### *Procedure*

When participants reported for the study they were told that they were participating in a study in which we would be collecting performance norms on an anagram task, where the task is to unscramble words as quickly as possible. In addition, they were told that we are also interested in the effects of a variety of factors might have on this task, which is why we would ask them to answer questions regarding their thoughts and feelings question during the task. After obtaining informed consent they were led into another room and sat in front of a computer. The participant was told that we would like to get some initial ratings from them, and they were asked to complete a mood rating form to get their baseline emotional state. When they were finished with this measure, they were informed that they would be taking a practice test and the experimenter walked them through the first anagram. The instructions read that anagrams are scrambled word problems, and that solving them means unscrambling the letters to form an actual word. For example, participants will read, “haocs” as the anagram, and its solution is “chaos”. If they could

not solve an anagram they were instructed to continue on to the next one. They were informed that if they moved on to the next anagram without solving one, the unsolved one would be considered to be a wrong answer. If they had no questions they were left alone to finish the practice task. Once the participant was done with the practice task, the encouragement manipulation was given.

*Encouragement Manipulation.*

In the encouragement condition, participants were given fairly explicit expectations that they would do well by providing them with false information regarding how others had done previously on the task. Specifically, they were told: “One thing I can tell you though, is that so far most participants have been finding this task to be quite easy and have been doing quite well on it, so I don’t think you’ll have much trouble with it at all. You should be able to readily solve most of these anagrams.” For the control condition, nothing was stated prior to the start of the task.

Once the manipulation had been delivered, and the participant had been given a chance to ask any question, the experimenter then left the room to allow the participant to complete the task on his or her own.

*Anagram Task.* Following the encouragement manipulation, all participants began working on the main anagram task, which was comprised of a sequence of three sets of 15 5-letter anagrams of varying difficulty. Participants were allowed 30 seconds to complete each anagram. Within each set of 15, the anagrams were selected to represent a broad range of difficulty, and the first two sets of anagrams included three that were made unsolvable by changing one letter in the scrambled word, and the final set included two such anagrams. These unsolvable anagrams were meant to put added pressure on the participant as well as to provide a measure of task

perseverance. All anagrams, across all three sets were presented in a single task order to all participants. Immediately after completing the anagrams in each of the three sets, participants completed a brief battery of appraisal and emotion ratings, as described in the measures section below.

After they completed the anagram task the participants were asked to complete a survey that would help us interpret our results (the survey contained the DPQ and several dispositional measures as described below). After they were done with the survey they were debriefed as to the purpose and hypothesis of the experiment. Comments and questions were invited. After all of the participants' questions had been addressed, they were thanked for their participation and dismissed.

### *Measures*

*Defensive Pessimism Questionnaire (DPQ)*. The DPQ is a nine-item questionnaire designed to measure use of defensive pessimism or strategic optimism in academic situations (e.g. Norem & Cantor, 1986a; Norem & Illingworth, 1993). In the DPQ, four questions represent a defensively pessimistic orientation (e.g. "I generally go into academic situations with low expectations, even though I know things usually turn out all right"). Four questions represent an optimistic orientation (e.g. "I often think about what it will be like if I do very well in an academic situation"). A ninth item (Item #3) assesses the respondent's actual past performance ("I've generally done pretty well in academic situations in the past"). Respondents indicate the extent to which each item describes them on a scale from 1 (not at all true of me) to 11 (very true of me). Scores are computed by computing the average of all 8 items, except item #3, after reverse coding the four optimistic items, so that all of the averaged items point in a pessimistic direction.

Following previous research (e.g., Norem & Cantor, 1986), we planned to use the DPQ to assign participants to strategic optimist, defensive pessimist, and mid-range conditions based on a tertile split on the scores obtained in the present sample. However, issues concerning the reliability of the measure in this sample led us to adopt a more complicated assignment strategy.

In previous research done by Norem (Norem & Illingworth, 1993; Norem & Cantor, 1986), she has reported the Defensive Pessimism Questionnaire (DPQ) to have a good reliability with Cronbach's alpha in the mid-70's, however, in our sample the full 8-item scale proved to be unreliable, demonstrating a Cronbach's alpha of only .45. However, we found that a reduced scale, based on just the four "pessimism" items, has a good reliability (Cronbach's alpha of .74). Given these findings, we decided to classify our participants into optimism/pessimism groups using both the full and reduced versions of the DPQ, separately, to classify participants into groups. Despite its lack of reliability, the full DPQ scale was used in order to provide continuity with previous research. In addition, we used the more reliable reduced scale as well because we thought, given its higher reliability; it might represent a better measure of defensive pessimism than the full scale.

Accordingly, based on the distribution of observed scores, using the full scale, persons scoring 5.75 or above were classified as defensive pessimists, and those scoring at or below 4.54 were classified as strategic optimists. For the reduced scale the corresponding cut-points for defensive pessimists and strategic optimists as 7.00 and 5.25, respectively.

Because these classifications were made following completion of the experiment, we were not able to ensure that equal numbers of participants within each condition. The break-down of participants within conditions for both assignment schemes are listed in Table 1.

Table 1. Breakdown of participant assignments to study condition using the full (top panel) and reduced (bottom panel) version of the DPQ to assign participants to defensive pessimism conditions.

Sex	Classification based on full DPQ	Condition		Total
		Encouragement	Control	
Female	Strategic Optimists	5	5	10
	Neutral	7	7	14
	Defensive Pessimists	7	10	17
	Total	19	22	41
Male	Strategic Optimists	6	4	10
	Neutral	5	0	5
	Defensive Pessimists	1	3	4
	Total	12	7	19

Sex	Classification based on Reduced DPQ	Condition		Total
		Encouragement	Control	
Female	Strategic Optimists	7	4	11
	Middle Group	6	4	10
	Defensive Pessimists	6	14	20
	Total	19	22	41
Male	Strategic Optimists	6	4	10
	Middle Group	5	1	6
	Defensive Pessimists	1	2	3
	Total	12	7	19

As can be seen from the table, the distribution across conditions was somewhat uneven, although there were enough participants within each cell to allow meaningful analyses to proceed. One notable aspect of the breakdown, however, is that in line with the distribution observed by

Norem & Illingworth (2003), considerably more women than men were classified as defensive pessimists, using either scheme, resulting in very few male defensive pessimists being assigned to either the encouragement or control conditions. Consistent with this assignment, scores on both versions of the DPQ were found to be correlated with participant sex, such that there was a statistically significant negative correlations with being male observed for both the full version of the DQP,  $r = -.26, p < .05$ , and the reduced version of it,  $r = -.29, p < .05$ . Obviously, this confound with participant sex places some limitations on the generalizability of any observed findings.

*Rosenberg Self-Esteem Scale:* Self-esteem was assessed with Rosenberg's Self Esteem Scale (Rosenberg, 1965). The Rosenberg Self-Esteem Scale is a 10-item self-report measure of global self-esteem. It consists of 10 statements related to overall feelings of self-worth or self-acceptance. The items are answered on a four-point scale ranging from strongly agree to strongly disagree. This scale has demonstrated good reliability and validity across a large number of different sample groups. In the present sample this measure provided evidence of good reliability (Cronbach's Alpha = .89).

*The LOT (Life Orientation Test):* The Life Orientation Test (LOT) was developed to assess individual differences in generalized optimism versus pessimism. The LOT (Scheier & Carver, 1985) consists of eight items, four of which are keyed in a positive direction, and four of which are keyed in a negative direction. Respondents are asked to indicate the extent to which they agree with each of the items, using the following response format: 4 = strongly agree, 3 = agree, 2 = neutral, 1 = disagree, and 0 = strongly disagree. In the present sample, the LOT demonstrated an alpha reliability of .86.

*Perceived Stress Scale:* The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) is a 14 item self-report instrument with a five-point scale: (0 = never, 1 = almost never, 2 =sometimes, 3 = fairly often, 4 = very often), is an economical and simple psychological instrument to administer, comprehend, and score. It measures the degree to which situations in one's life over the past month are appraised as stressful. Items were designed to detect how unpredictable, uncontrollable, and overloaded respondents find their lives. The Perceived Stress Scale poses general queries about relatively current levels of stress experienced. All items begin with the same phrase: In the past month, how often have you felt...? In the present sample the Perceived Stress Scale demonstrated an alpha reliability of .88.

*State-Trait Anxiety Inventory (STAI):* The State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970) is the definitive instrument for measuring anxiety in adults. The STAI clearly differentiates between the temporary condition of "state anxiety" and the more general and long-standing quality of "trait anxiety." Only the Trait version of the scale was used in the present sample. Numerous studies have provided evidence of the reliability and validity of this scale. In the present sample, the 20-item trait version of the scale demonstrated an alpha reliability of .92.

*Satisfaction with Life Scale:* Life satisfaction was assessed with Diener, Emmons, Larsen, and Griffin's (1985) five-item Satisfaction with Life Scale. This scale is intended to be a general measure of life satisfaction. It has good internal consistency, has demonstrated high stability over two months, and correlates highly with alternative measures of life satisfaction (Diener et al., 1985). In the present sample, this scale demonstrated an alpha reliability of .80.

*Perceived Competence Inventory.* Perceived Competence was assessed with a four-item scale designed to assess one's self-perceived ability to accomplish things that one undertakes or that are important to oneself (Smith, Dobbins, & Wallston, 1991). As reported by Smith at all, the

Perceived Competence Inventory has good reliability and validity. In the present sample it demonstrated a alpha reliability of .73.

*Task Specific Measures -- Performance.* Several measures were derived from the participant's performance on the task, and these measures will be used to assess the degree to which the manipulation of encouragement produced performance decrements for the defensive pessimists. These measures were computed separately for each of the three sets of 15 anagrams in the task, and included: The number of anagrams correctly solved in the set; the average time spent on each anagram that was correctly solved (both higher numbers of anagrams solved, and shorter solution times reflect better performance), as well as the average time spent on each solvable anagram the participant failed to solve, and the average time spent on the unsolvable anagrams, both of which provide indicators of task persistence.

*Task-Specific Measures – Appraisal and Emotion.* At several points during the task (i.e. immediately before beginning the task, and again after each set of 15 anagrams participants were asked to complete a series of measures designed to assess both their momentary appraisals of the task, and their current emotional state. Participants responded to each item using 9-point Likert-type scales. Single item measures to assess a broad array of appraisals and emotions were assessed at each time-point, but only the following, which were judged to be of most relevance to the experiment, were retained for analysis: Appraisals of motivational relevance (perceived importance of the task), motivational congruence (how consistent with one's goals things were going), problem-focused coping potential (ability to do well on the task), and emotion-focused coping potential (ability to handle the task, no matter how things went; Smith & Lazarus, 1990); and emotions of fear /anxiety, resignation (reflecting disengagement from the task), and challenge/determination (reflecting continued engagement in the task).

## Results

### *Overview of Analyses*

The analyses to be reported below are organized into three distinct sections. First, given the psychometric problems associated with our administration of the DPQ, as noted in our description of the measure in the Method, above, we start with some correlational analyses designed to examine the relative construct validity of the two forms of the defensive pessimism scale that we used to classify the participants in this study. In particular, given that defensive pessimists are generally not believed to differ from strategic optimists in terms of overall academic performance (Norem & Cantor, 1986), we examine the degree to which both measures are correlated with two indices of academic achievement: item 3 of the DPQ, which assesses the degree to which participants state that they have typically done well academically in the past, and their self-reported grade point average.

In the second set of analyses we test the main hypotheses of the study through a series of Analyses of Variance (ANOVAs). First we test the extent to which we were successful at replicating, for defensive pessimists relative to strategic optimists, the disruptive effects of encouragement on performance. These analyses consisted of 3 (defensive pessimism – defensive pessimists, mid-range participants, strategic optimists) by 2 (Encouragement – encouragement v control conditions) X 3 epoch of the problem-solving task mixed-model ANOVAs. In these and all follow-up ANOVAs in considering the defensive pessimism factor, we focused the comparisons of the defensive-pessimists to the strategic optimists, and do not report on findings involving the middle group. We do this because this middle group is routinely excluded from most studies of defensive pessimism because it is not considered to be of much interest, as individuals in this group are assumed to have both optimistic and pessimistic tendencies (Norem

& Cantor, 1986). We have included these participants in our sample only because we classified our participants along this factor only after the experiment had been completed. We follow up on these analyses of task performance with corresponding analyses of the task-related appraisal and emotion variables in order to examine the affective processes associated with the effects of defensive pessimism we were exploring in the first part of these analyses.

In the third set of analyses, we examine the dispositional correlates of both versions of the DPQ scale, in order to both get a better sense of what these scales assess.

#### *Construct Validity of the DPQ*

Norem has repeatedly emphasized that Defensive Pessimism is a motivational strategy that individuals use to motivate achievement, and a common finding has been that defensive pessimists do not differ from strategic optimists in terms of achievement (Norem & Cantor, 1986; Norem & Illingworth, 1993). Thus, one would expect scores on the DPQ to be uncorrelated with academic achievement. In order to look at the relation between defensive pessimism and achievement we correlated both scores from the DPQ with the two indices of achievement that we had available, the Item 3 on the DPQ, which asks about the participants' past performance and the participant's self-reported GPA. The results of these analyses are reported in Table 2.

Table 2. Correlation of Full and Reduced DPQ with DPQ-Item 3 and self-reported GPA

	Correlation with Defensive Pessimism	
	Full DPQ	Reduced DPQ
Item 3 – How well have done in the past	-.33**	-.09
GPA	-.25†	.08

Note, † $p < .1$ , \*  $p < .05$ ; \*\*  $p < .01$ .

Defensive pessimism and Item 3 on the DPQ (assessing past performance) were not correlated when only using the 4 negative items of the reduced scale, but were marginally negatively correlated using the full scale. Similarly, GPA was not correlated with the abbreviated scale, but is negatively correlated with the full scale. Based on these results, combined with the greater reliability of the reduced scale, it appears that the reduced scale, containing only the pessimism items appears to be a better indicator, at least in this study, of the defensive pessimism construct than is the full 8-item scale. In light of this, in reporting the results of the experiment we will focus our presentation on the analyses using the classification of participants based on the abbreviated DP scale. It should be noted that all analyses were repeated using the participant classification based on the full 8-item scale. However, perhaps consistent with the fact that the reduced scale appears to be a better indicator of depressive pessimism in this sample, the use of the classification based on the full scale failed to reveal any statistically reliable effects involving the comparison of defensive pessimists to strategic optimists. Therefore, only the results of the analyses using the classification based on the seemingly more valid reduced scale are reported.

#### *Analyses of task performance, and task related appraisal and emotion*

*Task performance.* In the first ANOVA's, we examined the effects of the experiment on several indicators of task performance, including the number of anagrams the participant solved correctly, the time it took to solve those anagrams that were correctly solved, the time spent on solvable anagrams that were not successful solved, and the time spent on the unsolvable anagrams that were embedded in the task. These analyses were performed to test whether the findings concerning the disruptive effects of encouragement on defensive pessimists were replicated. As a reminder, based on the previous research our predictions were that relative to strategic optimists,

in the encouragement, but not the control condition, defensive pessimists would demonstrate difficulty on the task, as evidenced by being less likely to correctly solve the anagrams, and by taking longer to solve the ones that they did correctly solve. There were no clear predictions made regarding how much time they would spend on the solvable problems they got wrong or the unsolvable ones.

Collapsing across the three phases of the anagram task<sup>1</sup> none of the four indicators of task performance demonstrated the predicted interaction of encouragement with defensive pessimism. Thus, no evidence was obtained in support of the hypothesis that encouragement disrupted the DP's performance. However, some effects, not involving this predicted interaction were observed, and are reported in an effort to help explain this failure to replicate the prior findings. For instance, although there was no significant effect for encouragement involving the defensive pessimism factor, there was a significant effect of condition,  $F(1,54)=5.26, p<.05$ . Overall, participants solved more problems in the encouragement condition ( $M=6.29$ ) than in the control condition ( $M=5.54$ ), which implies that the encouragement manipulation was somewhat effective.

There were no effects observed for the time spent on problems solved correctly. However, participants showed a tendency,  $t(54)=1.87, p=.07$ , for defensive pessimists ( $M=25.05$  sec) to spend more time trying to solve the impossible anagrams than the strategic optimists ( $M=23.03$  sec). In a similar manner, considering the anagrams that were solvable, but which the participants failed to solve, the defensive pessimists demonstrated a statistically significant tendency,  $t(54)=2.3, p<.05$ , to persevere, and to spend more time attempting to solve these anagrams ( $M=23.56$  sec) than did the strategic optimists ( $M=21.26$ ).

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<sup>1</sup> In none of the reported analyses, involving either the performance variables, or the appraisals and emotions, did any effects in the between-subject design statistically interact with the phases of the experimental task, and thus only the analyses collapsing on this time factor will be reported

*Appraisal and Emotion.* The appraisals and emotions that were assessed in the study were motivational relevance, motivational congruence, problem focused coping potential, emotion focused coping potential, anxiety, challenge, and resignation. Of these variables, there were no statistically reliable between-subjects effects observed for motivational relevance, motivational congruence, problem-focused coping potential, or resignation. Of the other variables examined, only one, emotion-focused coping potential, demonstrated an interaction between the encouragement condition and the participant's classification as defensive pessimists or strategic optimists,  $t(54) = -2.06, p < .05$ . This interaction was in line with the prior expectation that receiving encouragement would be disruptive, and potentially anxiety-provoking, to the defensive pessimists but not the strategic optimists. Specifically, in the encouragement condition, emotion-focused coping potential was lower for the defensive pessimists ( $M = 7.0$ ) than for the strategic optimists ( $M=8.30$ ), who showed high levels of emotion-focused coping potential that was highly similar to the levels demonstrated by both strategic optimists and defensive pessimists in the control condition (defensive pessimist  $M=8.38$ ; strategic optimist  $M=8.30$ ). Analyses for both challenge/determination and anxiety yielded only main effect differences between the defensive pessimists and strategic optimists that were quite similar. Relative to the strategic optimists, defensive pessimists reported lower levels of challenge/determination ( $M = 5.23$  v.  $6.15$ ),  $t(54) = -1.99, p = .51$ , and higher levels of anxiety ( $M = 3.05$  v.  $2.17$ ),  $t (54) =1.96, p = .054$ .

#### *Dispositional Correlates of Defensive Pessimism*

Table 3 depicts the correlations of both the full and reduced versions of the DPQ with several dispositional indicators, including two, trait anxiety and perceived stress, that are associated with being anxious, two, the LOT and the Perceived Competence inventory, that assess

stable expectations regarding ability and outcomes, and two, the Rosenberg Self-Esteem Scale and the Satisfaction with Life Scale that assess important facets of psychological adjustment. Given the descriptions of defensive pessimists in the literature (e.g., Norem & Cantor, 1986), one might expect defensive pessimists to be somewhat elevated in terms of anxiety, and to report somewhat lower levels of perceived competence, reflecting their proclivity to harness anxiety by setting low expectations. However, one would not expect to see differences in overall psychological adjustment to the extent to which defensive pessimism is an effective coping strategy for these individuals.

Table 3. Correlations of Dispositional Variables with both the Full and Reduced Versions of the DPQ

	Full DPQ	Reduced DPQs
STAI –Trait Anxiety	.41**	.42**
PSS (Perceived Stress Scale)	.38**	.44**
LOT-Optimism scale	-.61***	-.37**
Perceived Competence Scale	-.54***	-.35**
Rosenberg Self-Esteem	-.53***	-.43**
Satisfaction With Life	-.35**	-.24

Note: † $p < .1$ , \*  $p < .05$ ; \*\*  $p < .01$ , \*\*\* $p < .001$ .

In this table, and in line with the expectations outlined above, it can be seen that both versions of the DPQ correlate somewhat strongly with both trait anxiety and perceived stress. They also correlate somewhat negatively with future expectations and ability beliefs at the trait level, which are consistent with how Norem (Norem & Cantor, 1986) defines defensive pessimists. It should be noted however, that these correlations are extremely strong for the full version of the scale, and somewhat more moderate for the reduced version. However, the last two

correlations, with self-esteem and life-satisfaction suggest that the use of defensive pessimism might not be the effective strategy it has been described as (e.g., Norem & Cantor, 1986) because those scoring high on the defensive pessimism scale are reporting lower levels of both self-esteem and life satisfaction, suggesting that the use of this strategy is associated with relatively poor psychological adjustment. These correlations obtain for both versions of the scale, although the negative correlation with life-satisfaction appears to be somewhat stronger for the full scale than the reduced one. These correlations are consistent with the possibility that using defensive pessimism as a coping style may have deleterious consequences, in terms of potentially fostering low self-esteem and low life-satisfaction. However, it is important to note that because the associations presented here are correlational, we cannot draw strong conclusions about causality. Thus we can't determine whether using defensive pessimism leads to low self-esteem and poor life-satisfaction, or whether low self-esteem and dissatisfaction with one's life make it more likely to adopt this coping style. In either case, it is evident that the use of defensive pessimism as a coping strategy and these poor adaptational outcomes are associated.

## Discussion

Our study was unfortunately unsuccessful in replicating the effects that Norem and Cantor (1986) had found involving the disruption of strategy that encouragement should elicit on performance. Unlike what Norem has found, that encouraged defensive pessimists' level of anxiety is reduced, thus causing them to do poorly, we found that (what seems perfectly logical) all participants under the encouragement condition did significantly better on the task. In fact, we found almost no evidence for the disruptive effects of encouragement on the defensive pessimists' performance although the findings for a single variable, emotion-focused coping potential was

consistent with this hypothesis. Specifically, there was a tendency for lower levels of emotion focused coping potential to be observed under the encouragement condition for defensive pessimists, which does lend some support to our hypothesis that encouragement would put increased pressure on the defensive pessimists. However, these effects for this one variable did not translate to parallel differences in self-reported anxiety to the task (although defensive pessimists tended to be more anxious in response to the task in general), or to performance (although in general, the defensive pessimists tended to persevere longer on the anagrams they could not solve).

The general absence of the predicted disruptive effects on encouragement precluded our investigating the processes underlying such effects. Nonetheless, the findings we did observe offer clues as to the likely problem underlying our failure to replicate these performance effects. In particular, the fact that our encouragement manipulation produced plausible performance effects, and that appraisals of emotion-focused coping potential tended to demonstrate the predicted pattern of responses to the experimental design, suggests to us that it was not likely that an inadequate manipulation or a faulty experimental design was at fault.

Instead, given the poor reliabilities observed for the full version of the DPQ, which is the same version used in the research we were trying to conceptual replicate, it seems more likely that our weak to nonexistent findings were due to psychometric problems with this measure. Again, the full version of the DPQ, which was unreliable in this study, did not yield any reliable results in our experiment. The more reliable reduced version did. However, it is important to note that this reduced measure is distinctly different from that used by Norem and colleagues in previous research. Thus, although it appears to have more construct validity than the full scale, it is unclear how good a measure of defensive pessimism it actually is. Thus, a very likely reason for our

failure to replicate the previous findings is that our assessment of defensive pessimism may not have been particularly valid.

The pattern of correlations with the other dispositional variables we assessed are noteworthy in a couple of respects. First, these other variables were assessed with reliabilities consistent with those previously reported for these measures in the literature. Thus, it is unlikely that our assessment using the DPQ was bad due to some inherent flaw in the survey we used. Second, the pattern of correlations, particularly those with self-esteem and life-satisfaction, call into question whether the use of defensive pessimism is a generally useful and adaptive coping strategy, as argued by Norem and colleagues, or whether it might be more strongly related to poor psychological outcomes than has been previously suggested. To our knowledge, ours is the first study to look at how this construct relates to other dispositional constructs, and our findings suggest that these relations deserve considerably more scrutiny. However, given the clear problems with the DPQ in this study, strong conclusions should not be drawn regarding the adaptational correlates of defensive pessimism because the DPQ, as represented in this study, may not be a valid measure of this construct. Thus, our findings merely highlight the need to investigate this issue further.

Given the problems with the DQP in this study, our main conclusion and recommendation would be that considerably more effort must be made in developing a measure of the defensive pessimism coping style, with clearer construct validity and reliability. It is crucial that have a better measure of this construct than the DPQ appears to represent, if we are to better understand defensive pessimists and how they perform in academic and other settings.

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