THE ROLE OF PERFORMANCE IN THE
STRESS RE-APPRAISAL PROCESS

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ABSTRACT

Chronic stress, physiological and psychological, has been strongly associated with the onset of psychopathology, highlighting the importance of research investigating the experiences of stress. A current model of the stress process includes stress appraisal, stress reactivity, and performance in stressful situations. Past research has treated performance as a dependent variable in this model, but the research in this paper investigates the potential causal relationship of performance on stress re-appraisal. The relationship of performance with pre-task stress appraisal was compared to the relationship of performance with post-task stress appraisal. Participants filled out questionnaires pre-task and post-task, and gave a 5 minute speech in between when the Trier Social Stress Test was conducted. It was found that pre-task stress appraisal was not significantly correlated with performance, but performance did have a moderate negative correlation with post-task stress appraisal. Furthermore performance was associated with change in stress appraisal, and its inclusion in a linear equation predicted stress re-appraisal better than did pre-task stress appraisal alone. Considerations of the implications of performance interfering with the stress appraisal process are made accordingly.

INTRODUCTION

The negative effects of stress have been researched for over fifty years (e.g. Board, Persky, & Hamburg, 1956), and yet there is still much we do not understand. Stress is an important issue in psychology, as it has numerous negative consequences for individuals’ mental and physical health. Stress is associated with onset of psychopathology, as highlighted by the prevailing diathesis-stress etiology models of many mental disorders (e.g. Hooley & Gotlib, 2000). Chronic stress also negatively affects the physical functioning of the body, increasing risk for hypertension, diabetes, susceptibility to disease, neuronal atrophy, and more (McEwen, 1998). Understanding the causes of differences in stress reactivity, stress appraisal, and factors that influence their relationship, can improve our capacity to help individuals exposed to stress.

The following research study is a preliminary data analysis on some of the questions to be investigated more fully in a senior thesis. The data was collected with more rudimentary scoring and coding measures than will be used in the final senior thesis. The thesis will investigate differences in stress reactivity, stress appraisal, psychopathology, performance ability, other related factors, and their relationships to each other. For the purposes of this paper, the focus is on the relationship between stress appraisal and performance ability in a stressful situation, and how performance might be causal in changes in stress appraisal pre- to post-task.

LITERATURE REVIEW

Stress appraisal. Evidence suggests that appraisal-related processes are central in shaping how individuals react to encounters, emotionally and physiologically (Lazarus & Folkman, 1984). Appraisals allow people to evaluate an event as good or bad and determine potential implications; stress appraisal refers to an individual’s perception of whether an event will be or was stressful (negative) or not (Schneider, 2008). Stressful ap-
Appraisals can take two primary forms: threat and challenge (Lazarus & Folkman). Individuals making challenge stress appraisals perceive that they have the necessary resources to meet the demands of the event. Individuals making threat stress appraisals perceive the demands of the event to outweigh the resources they believe they have to cope with the event. Individuals also make stress re-appraisals later, when event details can be included and elaborated, to judge how stressful they experienced the situation to be (Schneider). Many factors influence how individuals make these appraisals.

**Stress appraisal and performance.** Performance ability could be one of the factors that influences stress appraisal of the situation, and in reverse, appraisal of the situation may influence performance. Norlander, Bood, and Archer (2002) found that adults who performed better on a Stroop task reported lower stress following the task than those who performed more poorly. Tomaka, Blascovich, Kelsey, and Leitten (1993) found that undergraduates who perceived less threat in a stressful situation exhibited greater actual performance on a mental arithmetic task. Their actual performance correlated to their perception of how well they performed upon reappraisal. The degree to which participants believed that they performed well was then negatively associated with re-appraising the situation as stressful, highlighting the psychological interaction between these two factors. This suggests that pre-situation stress appraisal is related to actual performance, and individuals are aware of how they performed, influencing post-situation stress re-appraisal. (This stress processes model stands as seen in Figure 1.)

![Stress Response Processes Model](image)

**Figure 1.** This diagram is a fuller version of the stress response processes model, taken from the prospectus for my senior thesis. For the purposes of this essay, the physiological reactivity component can be ignored. Much of the current research outlines the variables with this directionality: Initial stress appraisal occurs, which influences physiological activity, which influences performance, which influences stress re-appraisal.

**A new model proposal.** Performance ability plays an unclear role in stress re-appraisal post-task. Individuals with a threat appraisal are expected to perform relatively worse, and then report the situations as relatively more stressful post-task. The past research has treated performance as a dependent variable in this model. However, Tomaka et al. (1993) found that in some of the tasks, threat/challenge pre-task appraisals did not significantly correlate to performance, although both performance and threat/challenge appraisals correlated to stress re-appraisal post-task. This could suggest that performance is not only reliant on situational appraisal, but can be an independent trait of an individual, as some people are simply better performers. Individuals’ performance ability could have an interactional effect on the re-appraisal process, accounting for variation of stress re-appraisal within threat/challenge appraisal types. Therefore, performance ability may be more independent from pre-task stress appraisal, and comparatively more strongly correlated with re-appraisal of situation. (Figures 2 & 3)
Figure 2. This model treats performance as more of an independent variable, which may be partially influenced by appraisal, but ultimately has a separate effect on stress re-appraisal. Stress re-appraisal is then a function of both these variables. A stronger relationship is expected between performance and re-appraisal than between performance and initial appraisal.

Figure 3. This demonstrates how this interaction might occur within the maladaptive stress response group. Individuals’ performance ability could have an interactional effect on the re-appraisal process, accounting for variation of stress re-appraisal within threat/challenge appraisal types. Again this diagram is taken from a fuller model in the senior thesis prospectus.

Hypotheses. Pre-task stress appraisal is expected to positively correlate with post-task stress appraisal. Pre-task stress appraisal is expected to have a weak negative or insignificant correlation with performance score. Performance score is expected to have a negative correlation with post-task stress appraisal. Change in appraisal pre- to post-task is expected to be negatively correlated to performance score. Pre-task stress appraisal and performance score together is expected to predict post-task stress appraisal better than pre-task stress appraisal alone.

METHODS

Performance measure. Performance was operationalized by an averaged score from two coders (one male and one female undergraduate) who watched the videos of participants’ speeches. Inter-rater correlation of performance scores was $r = .877$ with $p < .001$, a significantly high level of agreement. Scores were out of 36, calculated from 4 items rating body language, speech flow, energy of speech, and eye contact on a 1-9 Likert scale. (Appendix A).
Stress appraisal measure. Subjects filled out the same task questionnaire pre- and post-task. Each score was out of 21, calculated from 3 items rating how much participants viewed the speech as stressful, a threat, and a positive challenge on a 1-7 Likert scale. (Appendix B and C).

Procedure. We have run 66 subjects between the ages 13-17. After subjects filled out questionnaires and had their stress physiology measured, the Trier Social Stress Test (Kirschbaum, Pirke, & Hellhammer, 1993) was implemented. The experimenter explained that the subject had to give a speech in front of two professionally trained evaluators who would judge their performance. These two evaluators were in fact confederates instructed to provide only neutral or negative feedback. Subjects were first given 5 minutes alone to prepare for the speech and fill out pre-task questionnaire. The two evaluators then returned to the room and took notes while delivering intimidating facial and body feedback during the speech task, which was video recorded. Post-task affect questionnaire was given and stress physiology measured again. Afterwards subjects were debriefed to reduce possible distress caused from the study.

RESULTS

Twenty-nine subjects were selected for this data analysis, based on usability of videos and completion of questionnaires. Subjects’ pre-task stress appraisal scores ranged from 4 to 17, with a mean of 9.69 (sd = 3.69). Subjects’ post-task stress appraisal scores ranged from 3 to 21, with a mean of 12.07 (sd = 4.63). Performance scores ranged from 10.75 to 29.00, with a mean of 20.07 (sd = 4.99). Pre-task stress appraisal had a correlation of r = .62 (p < .00) with post-task stress appraisal. Pre-task stress appraisal had a correlation of r = .02 (p = .90) with performance. Performance had a correlation of r = -.41 (p = .03) with post-task stress appraisal. Changes in stress appraisal were calculated into delta scores by subtracting pre-task stress appraisal from post-task stress appraisal. Performance had a correlation of r = -.57 (p = .001) with change in stress appraisal. (Figure 4.) Linear equation for pre-task appraisal predicting post-task appraisal is 4.6 + .77x = y, with R² = .38. Linear equation for pre-task appraisal (x) and performance (z) predicting post-task appraisal (y) is 12.37 + .78x - .39z = y, with R² = .56.

Figure 4. On the x-axis is performance score and on the y-axis is change in stress appraisal from pre-tak to post-task. The negative correlation between these two variables is moderately strong r = -.57 (p = .001) with change in stress appraisal. Higher performance scores are associated with a reduction in participant-reported stress appraisal, whereas lower performance scores are accompanied by an increase in participant-report stress appraisal.
DISCUSSION

These results were in line with the hypotheses, and generally support the notion that stress re-appraisal is a factor of both initial stress appraisal and performance. The strong positive relationship between pre-task stress appraisal and post-task stress appraisal suggests that pre-task stress appraisal is influential. However, performance was not correlated to pre-task stress appraisal, suggesting that stress appraisal does not necessarily predict performance, and performance should perhaps be consider more of an independent variable in this model. The negative relationship between performance and post-task stress appraisal suggests that those who perform better judge the task as less stressful afterwards. The negative relationship between performance and change in stress appraisal suggests that those who perform better had a reduction in stress appraisal, while those that performed poorly had an increase in stress appraisal. So regardless of initial stress appraisal, performance could be a factor responsible for changes in stress appraisal. Lastly, the linear equation with both pre-task stress appraisal and performance had a stronger line of best fit ($R^2=.56$) than did the equation with only pre-task stress appraisal ($R^2=.38$). This suggests that stress re-appraisal process is influenced by both pre-task stress appraisal and performance. This could be considered in future studies using a model of stress appraisal.

In addition to expanding our understanding of the stress appraisal process, the results of this study brings into question our ability to accurately appraise our own stress. An individual may show initial threat stress appraisal, and perhaps experience stress while performing, but they could still performance well due to independent performance ability. The result might be that they reappraise the experience as less stressful, but this is not reflective of the stress they actually underwent. This presents potential problems for physical health, mental health, and therapy. Being unaware of maladaptive stress reactivity could lead high-performing individuals to continue to put themselves in stressful situations, unknowingly exposing their body to stress damage. They may not remember the events as stressful, but their body still undergoes the stress. One limitation of this study is that stress reactivity was not an included measure, and its inclusion could further clarify the relationship between stress appraisal and performance. Regardless, if stress re-appraisal is partially based on performance, then perhaps individuals who perform well naturally may misinterpret stressful situations as facilitating, and neglect to avoid these situations. Then their ability to perform well may come at the expense of more psychopathology. In a therapeutic setting, patients may be less willing to make necessary life changes, as they do not interpret their stressful situations as unhealthy. More research on stress will help us learn how individuals can understand their stress in the healthiest way.

REFERENCES


& Personality: An International Journal, 30 (5), 495.


**APPENDICES**

Appendix A: Coding of Speech Performance Score Items

1. **Body Language**
   
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4. **Amount of Eye Contact**
   
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*Indicates a reverse scored item

Appendix B: Pre-task Questionnaire

1. The upcoming speech task will be stressful to complete.
   
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2. The upcoming speech task is a threat.
   
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3. *The upcoming speech task is a positive challenge.*
   
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*Indicates a reverse scored item

Appendix C: Post-task Questionnaire

1. The speech task was stressful to complete.
   
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2. The speech task was a threat.
   
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3. *The speech task was a positive challenge.*
   
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*Indicates a reverse scored item