

Abstract

This study seeks to further understand the relationship between stress and self-efficacy, as well as provide evidence for a potential moderator of the relationship: interruptions. The researcher draws on existing theories such as the Conservation of Resources Theory (Hobfoll, 1989) and Self-efficacy Theory (Bandura, 1986), as well as existing work on interruptions as a construct. Using an experimental manipulation, participants will provide pre- and post-test measures of self-efficacy. Physiological and self-report measures of stress will also be provided pre- and post-test. Participants will undergo one of four experimental manipulations of stress and interruptions. Results will be analyzed using a repeated measures split plot mixed design ANOVA to understand significance. An interaction between stress and interruptions is expected to have an effect on self-efficacy between pre- and post-test measures. Implications and limitations are discussed.

The Impact of Stress and Interruptions on Self-Efficacy

In both our work lives and our personal lives, we are constantly bombarded with information. Cell phones allow us to be accessible via messaging apps, email, and conference calls. We find ourselves constantly interrupted by beeps, knocks, and rings. Recently, the line between work and home has become more blurred, with as much as 42% of people working outside of the brick-and-mortar offices (Wong, 2020). This “always on” lifestyle can take a toll in many areas, and most of us have felt overwhelmed by it at least once.

Acute stress has mental, physical, and emotional health implications, all of which carry with them a body of empirical evidence (Epel et al., 2018). Stress can contribute to heart problems and high blood pressure as well as anxiety and depression (Epel et al., 2018). The purpose of this paper is to explore the emotional implications stress can have. More specifically, does stress influence how competent one feels at work? Drawing on the conservation of resources (COR) theory and the self-efficacy (SE) theory, I plan to test the relationship between stress and self-efficacy through experimental manipulation. I expect there to be a negative relationship between stress and self-efficacy. This will provide stronger support for the relationship between stress and self-efficacy than what currently exists in the literature, thus underscoring the importance of workplace stress reduction for performance outcomes. Additionally, I hope to provide evidence for attentional interruptions as a moderator for the relationship between stress and self-efficacy.

Conservation of Resources Theory

An important first step to understanding how stress could influence self-efficacy is a look at one of the most widely referenced theories of work-related stress, the Conservation of Resources Theory (COR; Hobfoll, 1989). Conceptually, stress can be defined as how people

respond to challenges in their environments that either threaten or reduce resources or draw attention to a lack of resources (Hobfoll, 1989). Resources include mastery, self-esteem, learned resourcefulness, employment, and socioeconomic status.

COR provides a parsimonious view of how people work to conserve current resources or acquire new resources from their environment. At work, this can look like someone closing their office door on a busy day or turning off their cell phone to limit the number of interruptions they receive, thus preserving their resources for use on their current task (Puranik et al., 2020). Additionally, resources are believed to be acquired or restored through leisure activities or hobbies (Sonnetag & Fritz, 2007). In the Sonnetag and Fritz study, for example, four distinct profiles for resource recovery methods were found: psychological detachment, mastery, relaxation, and control. Another study looked at how different profiles of daily recovery experiences might be varied or stable across days, and how that might impact somebody's availability of resources at work (Chawla et al., 2019), finding evidence to support the idea that some profiles can be more beneficial to well-being and work outcomes than others.

While acquiring and conserving resources is one piece of the puzzle, understanding what depletes resources is another piece. In addition to frequent interruptions, common workplace stressors might include a low work-life balance (Karkoulian et al., 2016) and high job demands (Perrewe & Ganster, 1989). In addition, one study found that abusive leader relationships have long-term negative effects on employees, leading to emotional exhaustion (Peltokorpi, 2019). It is not a stretch to conclude, then, that stress and depleted resources could lead to negative work outcomes, such as reduced organizational commitment.

The relationship between organizational commitment and stress is well-studied (Hakanen et al., 2006; Glazer & Kruse, 2008). Additionally, there is empirical support for the idea that this

stress-commitment relationship is mediated by self-efficacy (Klassen et al., 2012). It seems that high self-efficacy serves as a buffer against stress; if one believes they are capable of overcoming the obstacles in the situation, they will be more committed to seeing it through. With that in mind, there is a gap in our current understanding of the relationship between stress and self-efficacy.

Self-Efficacy Theory

Commonly misidentified as self-esteem, self-efficacy can be defined as “an individual’s perception of their ability to perform across a variety of situations” (Judge et al., 1998). Self-efficacy develops over time and is influenced by information collected from four central sources: vicarious experience of modeled behavior in similar situations, verbally obtained new information, affective and physiological states, and mastery of an experience (Bandura, 1986). A number of factors can reduce self-efficacy in individuals, such as poor social support and negative feedback (Grether et al, 2018). Individuals with high self-efficacy tend to have better workplace outcomes (Carter et al., 2016).

The relationship between stress and self-efficacy is somewhat unclear. Some existing research suggests that self-efficacy serves as a buffer against perceived stress (Klassen et al., 2012). However, these studies are correlational in nature, so it is not possible to conclude the direction of the relationship. It could be that stress changes the levels of self-efficacy. Consider the mediating relationship self-efficacy has on stress and organizational commitment. Perhaps in stressful situations, self-efficacy is reduced, but those who had a higher baseline level of self-efficacy remain committed. In contrast, if someone who starts off with a low belief in their abilities and encounters a high stress environment, their self-efficacy will be depleted to a higher

degree, thus resulting in lower commitment. Additionally, there may be existing moderators on the relationship between self-efficacy and stress, such as interruptions.

Interruptions

There are many variations of interruptions in the literature, including interruptions that require attentional resources, behavioral resources, or both. For the purpose of this study, I will be looking specifically at Chong and Siino's definition: "any instance in which workers turn attention away from their primary work task either on their own or in response to others' actions" (2006). As previously mentioned, workplace interruptions are on the rise and are found to be a key contributor to stress (Puranik et al., 2020). Frequent interruptions deplete the available resources needed to complete a task, whether that be attentional, cognitive, or both (Baethge & Rigotti, 2013). Given the relationship stress has with self-efficacy, it is conceivable that interruptions could moderate that relationship. Perhaps the presence of interruptions increases stress levels and thus reduces self-efficacy.

Connecting the Dots

This research hopes to provide evidence that acutely stressful situations reduce self-efficacy by examining the relationship using an experimental manipulation. By controlling the stress-inducing scenario in a lab environment, I hope to illustrate a clear directional relationship between stress and self-efficacy. This will be additive to the current literature, as prior research has been correlational in nature and does not allow for causal conclusions. Additionally, previous studies relied on longitudinal self-report measures as a way to collect self-efficacy and perceived stress data. While this study will also use some self-report measures, it is adding a physiological measure of stress to bolster the validity of the results.

In addition to clarifying the direction of the relationship between stress and self-efficacy, this research also hopes to provide evidence that interruptions moderate this relationship. By manipulating the presence of attentional interruptions, I hope to add causal evidence to the existing literature.

Hypotheses

Hypothesis 1

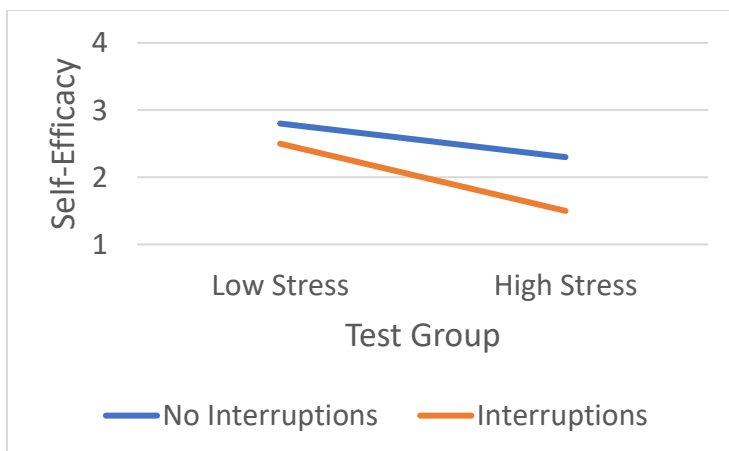
This study hopes to provide further insight into how stressful work environments might influence self-efficacy levels in employees. It is expected that there will be a negative relationship between self-efficacy and stress, such that high levels of stress will result in lower levels of self-efficacy.

Hypothesis 2

This study hopes to find support for the idea that attentional interruptions moderate the relationship between stress and self-efficacy. As interruptions increase and stress levels rise, people will report a reduced self-efficacy when compared to those in lower stress, uninterrupted situations. See Figure 1 for a visual representation of the expected outcomes.

Figure 1.

Interaction between stress and the presence of interruptions on self-efficacy.



Method

Participants

Ideal participants for this study will be full-time employees in the United States, aged 18-70 with no history of mental health or heart related illness. The effect size of the study is expected to be .15, which is moderate. Based on a moderate effect size, $\alpha = .05$, and a power of .80, four groups, and two measurements, the ideal number of participants is 128 people because a split-plot mixed design ANOVA will be used for analysis. Participants will be recruited via posters in local communities throughout the United States and through the use of snowball sampling (word of mouth).

Measures

Pre- and Post-test Self-Efficacy

Occupation-related self-efficacy will be measured using a 6-item scale developed by a previous study (Schyns & v. Collani, 2002). A sample item is “Whatever comes my way in my job, I can usually handle it.” See Appendix A for full scale items.

Work-related Stress

Stress will be measured before and after the experimental manipulation physiologically in addition to self-report. This measure serves as a manipulation check for the presence of work-related stress. Participants will have their pulse measured and their number of respirations counted and documented for comparison before and after the experiment, as this is an empirically accepted way to measure levels of acute stress (Kirschbaum et al., 1993). In addition, participants will be asked to complete a 5-item acute stress survey developed for this study. A sample item is “I feel mentally exhausted.” This survey will be completed pre- and post- test to

give additional support to the physiological stress responses and bolster the validity of the measure. See Appendix B for the full scale items.

Procedure

Participants will be randomly selected to be in one of four groups using an online randomizer. Group 1 will be the high stress-interruption condition. Group 2 will be the low stress-no interruption condition (control group). Group 3 will be the high stress-no interruption condition. Group 4 will be the low stress-interruption condition. A consent form advising of the monitoring of non-invasive physiological responses, as well as the general purpose of the study, will be provided to ensure participants understand all potential risks prior to agreeing to participate. They will also be permitted to leave the study at any point throughout the process with no penalty.

Once consent is obtained, participants will each be given a qualification questionnaire that asks about diagnosed pre-existing conditions such as anxiety, depression, and heart disease. Any individuals with pre-existing conditions will be dismissed from the study to minimize risk to the individual as well as preserve the validity of study results. Qualified participants will be asked to complete the self-efficacy scale and the acute stress survey. A baseline heart rate and respiration count will also be documented at this time.

Group 1

Once baseline information is collected, participants in Group 1 will be given instructions for the experiment. This experiment is adapted for work-related stress from the Trier Social Stress Test (Kirschbaum et al., 1993), a test designed to elicit an acute stress response through an impromptu speech performance and mental arithmetic in front of a judge. To make this more relevant to work-related situations, participants will be asked to take 15 minutes to review

business-related materials and prepare a 5-minute presentation to an “executive” identifying key issues and providing recommendations for the solutions. The business-related materials will consist of three complex strategic issues in the natural gas industry, as well as supplemental materials containing statistics on workplace engagement, competition, and turnover. At the end of the 15-minute prep period, participants will deliver their findings to a research assistant identified as an executive leader.

During the preparation period, the participants in this group will be interrupted by the research assistant two times. The research assistant will enter the room, obtain eye contact with the participant, and verbally tell them how much time is left. This will be repeated every 5 minutes until the 15-minute timeframe is finished.

During the presentation, the research assistant playing the role of the executive will ask two questions; one question will be about potential risks to the business bottom line based on the recommendations, and the other question will be about change management concerns as a result of enacting the recommendations. The quality of the presentation and recommendations will not be rated, as the purpose of the exercise is to elicit the acute stress response. Once the exercise is completed, the participant will be thanked and a second research assistant will dismiss the “executive”, collect Time 2 heart rate and respirations, and administer the self-efficacy and stress questionnaires.

Group 2

Similar to Group 1, Group 2 will be asked to complete a task for an executive. Since this is the full control group, the task will be much simpler and ideally be minimally stressful. Participants will be asked to take 15 minutes to prepare a 5-minute presentation that will be delivered to an executive over the phone. The materials provided will be the same as those

provided to Group 1. However, Group 2 participants will be given a list of common business issues (all of which are covered in the materials), as well as a list of appropriate solutions for each issue. In essence, they will simply have to read the materials and match the problems and solutions with each other. Additionally, they will not be interrupted during the preparation period.

At the end of the 15-minute timeframe, a research assistant will call the “executive” and the participant will read their findings over the phone. The executive will express appreciation for the efforts and advise that they will take the findings into consideration. Once the call is complete, the research assistant will return to collect Time 2 heart rate and respirations and will administer the self-efficacy and stress questionnaire.

Groups 3 & 4

Group 3 participants will have an identical task and preparation materials to that of Group 1. The only difference between the two groups is that Group 3 will not be interrupted during the preparation period. Group 4 participants will have identical task and preparation materials to that of Group 2, but they will be interrupted twice during the preparation period.

Anticipated Analysis

Once sufficient participation has been achieved for both groups, the study will be closed and analysis will begin. A repeated measures split plot mixed design ANOVA analysis will be conducted to look at differences in the means of Groups 1-4 from the pre-test and post-test for the self-efficacy survey, the acute stress survey, and the physiological indicators of stress (heart rate and respirations). Stress, heart rate, respirations, and the presence of interruptions will all be independent variables, and the dependent variable will be self-efficacy.

Limitations

While this study is additive to the current body of research, there are some limitations. The purpose of conducting a lab experiment is to induce stress in a controlled manner, as well as introduce interruptions in a consistent way across the groups. With that in mind, this systematic approach may not effectively mimic the real-world work environment. I decided to be conservative with the number of interruptions that occur within the 15-minute preparation period to reduce the likelihood that the results might be amplified. However, it could be that in reality, the strength of these results is less representative of how frequently interruptions occur. Perhaps self-efficacy is reduced to a higher degree in reality than what is shown here. Future studies would benefit from first collecting data on the mean frequency of interruptions on a daily basis and then using that to determine how many times to interrupt participants in those conditions.

Additionally, this study hopes to explain the causal relationship between stress and self-efficacy. It is possible, however, that there are confounds not considered here. For example, those high in achievement orientation may experience a larger impact on self-efficacy when difficult, stress inducing situations are compounded with interruptions. Perhaps an influx of perceived tasks chips away at the feeling of accomplishment. Future studies could look more closely at self-efficacy and stress within the context of need-for-achievement theory.

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Appendix A

Occupational Self-efficacy Scale.

Please rate the following items from 1-5, with 1= strongly disagree and 5=strongly agree:

1. I can remain calm when facing difficulties in my job because I can rely on my abilities.
2. When I am confronted with a problem in my job, I can usually find several solutions.
3. Whatever comes my way in my job, I can usually handle it.
4. My past experiences in my job have prepared me well for my occupational future.
5. I meet the goals that I set for myself in my job.
6. I feel prepared for most of the demands of my job.

Appendix B.

Acute Stress Survey.

Please rate the following items based on how you currently feel in this moment from 1-5, with 1= strongly disagree and 5=strongly agree:

1. I feel calm. (reverse coded)
2. I feel tense.
3. I feel mentally exhausted.
4. I feel lighthearted (reverse coded)
5. I am irritable or grouchy.