

Meditation, Personality, and Workplace Stress

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Abstract

Stress is prevalent in the workplace and can affect employees at any level of an organization. This study explored the role of meditation frequency, when given the choice of how to meditate, on stress reduction in the workplace. Previous research has emphasized the role of personality traits in perceiving stressful situations (Childs et al., 2014), and this study investigated if conscientiousness and neuroticism personality traits helped to limit or enhance stress reduction. A sample of 40 participants was given the choice of both how frequently they choose to meditate and what style of meditation they chose to practice over two weeks. Results showed that when given the choice of meditation style, meditation frequency had a significant impact on stress reduction. The two personality traits did not provide a significant impact on meditation frequency's



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change in perceived stress. The findings suggest that the frequency of meditation practice matters, and, in practical terms, future organizational policies may promote employee choice on meditation frequency and style.

Keywords: meditation frequency, meditation autonomy, personality, perceived stress

Meditation, Personality, and Workplace Stress

Stress can create unnecessary agony for employees in the workplace. It hinders individual production output and efficiency, limiting one's performance on the job (Birhanu, 2018 & Mishra et al., 2011). While some research has investigated the use of mindfulness meditation programs to limit the effect of stress on performance, efficiency, and well-being outcomes, they have focused on wide-scale, systematic implementations in which all participants are required to use the same meditation format (Allexandre et al., 2016 & Kersemaekers, et al., 2018). However, meditation has an ambiguous interpretation and can be practiced in a variety of ways (Matko & Seminer, 2019). Therefore, this study incorporates the use of meditation as related to the reduction in stress in an individualized manner. That is, in the current study participants were allowed the freedom and flexibility to incorporate the most effective meditation style for themselves. Also, previous research has indicated personality traits may influence the perception of stressful events within one's environment. More specifically, individuals with high levels of conscientious or neurotic personality traits may perceive things as more or less stressful in their environments (Janjua & Chandrakanta, 2012). Yet there have been limited efforts examining employee personality and potential personality differences in reactivity to work-specific interventions, such as meditation, to reduce stress. This study features three main variables. The two independent variables are the frequency of meditation and two personality traits (conscientiousness and neuroticism), while the dependent variable is the changes in perceived workplace stress throughout the two-week intervention. The first goal of the study was to examine the effect of frequency of meditation, given the context of freely chosen meditation style by the individual, on reduction in stress over time. The second goal was to see whether conscientiousness or neuroticism plays a role in enhancing or limiting that reduction in stress as a result of a freely chosen meditation style. The present study utilizes a pre- and post-test survey design to examine the impact of a two-week meditation program on reductions of stress over the two weeks. Results of this study will help serve as guidance to help reduce stress when in the workplace setting.

Meditation, its Benefits, and Meditation Styles

Meditation has been a traditional practice used for coping with stressful situations. Meditation programs have been shown to improve mood, reduce stress, and lead to greater improvement in attentional control (Walsh et al., 2019). In broad terms, meditation is the mental and training technique used by meditators who tap into an altered state of consciousness.

However, the definition is ambiguous and up to individual interpretation (Matko & Sedlimier, 2019). It is a practice that traces its roots to ancient Buddhist traditions. Meditation is most commonly performed when an individual is in an upright, seated position, focused on his or her breathing. But there are other styles of meditation practices that focus on different goals and movements (Weilgosz et al., 2019). Regardless of the style of meditation, the practice as a whole, when performed consistently, can impact how individuals operate. Gotink et al., (2016) discovered that the long-term effects of meditation have been found to impact individuals' neurological pathways. More specifically, consistent meditation increases brain activity in areas that deal with stress such as the prefrontal cortex and hippocampus (Gotink et al., 2016). It also has an impact on an individual's social environment. Meditation has been found to decrease loneliness and increase daily social interactions (Lindsay et al., 2019). In all, consistent mindfulness interventions provide meaningful impact in a variety of areas. Mindfulness meditation, for one, has been universally found to increase subjective wellbeing (Walsh et al., 2019). Mindfulness meditation refers to a family of practices with a common focus on decreasing distraction and enhancing awareness of the mental state (Wielgosz et al., 2019).

There are three distinct mindfulness meditation styles that help practitioners monitor the present moment, as indicated by Burke et al. (2017). Focused attention meditation (FAM) deals with focusing on a certain object or event and maintaining concentration. It is used as a tool for meditators to stay in the present moment and has been can improve both individual attention and maintaining focus for long periods of time (Scott, 2021). Open monitoring meditation (OMM) allows for a gradual defocus of an object to broad monitoring of the surrounding environment, remaining attentive to arising factors. Over

time, open monitoring practice can lead to better thinking, increased emotional intelligence, and enhanced ability to overcome mental biases (Voss, 2018). Loving-kindness meditation (LKM) focuses on developing a love for oneself as well as extending compassion towards others, especially to those who are viewed as unlikeable. Over time, individuals who practice LKM have shown an increased capacity for forgiveness, connection to others, and self-acceptance (Scott, 2020). However, mantra meditation distinguishes itself from mindfulness practices by squarely monitoring one's focus on a mentally repeated word or phrase, rather than assessing their environment (Burke et al., 2017). It is performed by repeating syllables, words, or phrases, that help individuals maintain a sense of focus on a specific subject. Two key benefits of mantra meditation use are better management of individual emotions and unwanted thoughts (Lynch et al., 2018).

In addition, the duration of the meditation plays a role in creating meaningful, positive change for the meditator. Long-term use of LKM has been shown to boost performance as individuals increase their meditation skills over time (Zeng et al., 2017). Zeng et al., 2017 goes on to state that duration has an impact on depressive systems as daily meditation is positively correlated with positive emotion. In short, the use of meditation has been shown to increase subjective well-being (Walsh et al., 2019).

Meditation and Stress in the Workplace Setting

Stress is defined as an intrinsic or extrinsic stimulus that evokes a biological response (Yarobeyi, et al., 2017). These responses can lead to a wide range of circumstances for an individual. From changing biological homeostasis to dealing with life-altering mental and physical conditions, stress can be felt to varying degrees (Yarobeyi, et al., 2017). Stress can be acute or chronic. Acute stress rises from episodic, short-term events while chronic stress is enveloped by ongoing stressful conditions that can lead to long-term suffering (Hammen et al., 2017). Individuals are at higher risk of disease when they are in constant exposure to a stressful environment. In essence, stress is felt by individuals in varying degrees and may lead to negative effects if left unresolved.

One of the biggest sources of stress is one's workplace. Recent studies have shown the work setting to have high levels of stress amongst employees, leading to increased burnout rates (Birhanu, 2018 & Mishra et al., 2011). To understand why workplace stress is prevalent, it is critical to understand the factors that contribute to this issue. The World Health Organization has identified the most common stressors or events that cause stress in the workplace. These include but are not limited to employee workload, lack of participation, and control on the job (Maulik, 2017). Issues like these are experienced across industry types. According to Moreno et al. (2020), occupational stress is an issue that is felt worldwide, as stress is the number one cause of workplace absenteeism in the UK and is experienced by 83% of the US workforce. Workplace stress has not only impacted employee well-being, but it is making a dent in organizations' financial situations. As a result, there has been a growing attempt by researchers to investigate the cost-of-illness for businesses, or the lack of production due to employee health problems (Hassard et al., 2018). Given that stress is such a widespread problem in the workplace, what are some effective ways to reduce workplace stress?

To combat the issue of stressful working environments, there have been some efforts to explore the effect of various stress-reduction programs on employee well-being, with mindfulness meditation programs being one of the most common (e.g., Kersemaekers et al., 2018 & Allexandre, 2016). These studies have demonstrated that incorporating meditation can positively impact an individual's well-being when facing work-related situations. Kersemaekers, et al., (2018) found a greater reduction in burnout and perceived stress from participants of meditation training compared to scores of the pre-intervention period. Another study performed by Allexandre et al., (2016), examined the influence that a web-based stress management program (WSM) had on its impact on reducing employee stress levels. Participants were divided based on different degrees of access to health resources, but all saw an improvement in their overall mental health. These two studies illustrate the importance of implementing mindfulness programs in the workplace setting. However, such organizationally-led mindfulness programs focus on achieving systemwide problems rather than solving stress dealt with at the individ-

ual employee level. They did not consider the possibility that when given choices on which program to implement, or how long/how often, individuals will be affected by their mindfulness practice of choice. A prominent theory in psychology related to the importance of autonomy is called self-determination theory, the work of which is summarized in Ryan et al., (2021). The authors argue that giving people autonomy over the tasks they engage in (e.g., choice of meditation style in this case) leads to greater subjective well-being, intrinsic interest in the activity, and more. Studies on a wide variety of tasks and contexts, including the workplace, have supported their assertions (Ryan et al., 2021).

H1: The higher the frequency of meditation, as chosen by the participant, the lower the perceived stress over time.

The Role of Personality in Response to Meditation as Related to Stress

Personality traits play a major role in determining an individual's response to a stressful environment (Childs et al., 2014). Childs et al. (2014) goes on to state that those who are more susceptible to criticism and negativity do not show as much resilience as someone who is sharply focused and goal-oriented. On the job, personality also plays a big role as it can influence the amount of success or failure individuals have when battling stressful job situations (Janjhua & Chandrakanta 2012).

The two personality traits that are most commonly associated with differences in responses to stressful situations are conscientiousness and neuroticism (Jackson et al., 2010; Widiger & Oltmanns, 2017). Conscientiousness is defined as the differences in the tendency to follow socially prescribed norms (Jackson et al., 2010). Individuals with high levels of this trait exhibit goal-oriented and impulse control behavior. Obeying social norms and rules, these individuals show meticulous nature in their work. In terms of stress, those with high levels of conscientiousness experience fewer self-dependent episodic and interpersonal chronic stressors than other personality traits (Murphy et al., 2013). According to Volrath and Torgersen (1999), individuals with high levels of conscientiousness and low levels of neurotic traits have the greatest ability to attack stress out of all personality combinations. This plays a significant role in establishing less than average stress while performing effective coping styles compared to

other personality groupings (Vollrath & Torgersen, 1999). Already equipped to respond positively to stressful environments, those with high conscientiousness might not benefit as much from being asked to meditate each day for two weeks and are hypothesized to experience significant differences through a pre and post-test meditation program.

H2: As conscientiousness increases, the weaker the relationship between frequency of meditation and reduction in perceived stress over time.

Another personality trait that relates to managing stress is neuroticism. This trait is defined as the disposition to experience negative emotions (Widiger & Oltmanns, 2016). Widiger & Oltmanns (2016) go on to state that individuals with high neuroticism experience poor performance when dealing with stressful situations. Additionally, they elicit a higher frequency of irregular responses when dealing with threatening environments around them. Over time, individuals with high levels of neuroticism could suffer and develop cases of asthma, cardiovascular issues, and disruptive immune functioning (Widiger & Oltmanns, 2016). Individuals with high neurotic behavior act poorly in stressful situations. Studies show that those with high neurotic personalities often neglect problem-focused coping and perform significantly fewer methods to boost their mood (Vollrath & Torgersen 1995). Instead, they perform avoidance/discharge coping and select not to deal with stressful situations head-on. The lack of resilience is more apparent when compared to other personality trait combinations. Neurotic personality traits demonstrate an inability to create resilience and respond poorly to attacking stressful situations (Widiger & Oltmanns, 2016). Therefore, those with high neuroticism may benefit quite a bit from being asked to meditate each day for two weeks, and thus neuroticism is hypothesized to have a stronger moderating impact on meditations' reduction in stress.

H3: The higher value of neuroticism, the stronger the relationship between meditation frequency and reduction in perceived stress becomes.

Method

Participants

For this study, adults (24 women, 16 men, $M_{\text{age}} = 42.2$ years, age range: 19-81) were recruited with flyers posted on the UNC Charlotte campus as well as recruitment messages from the primary investigator's (PI) social networks. To qualify, participants must have worked at least 20 hours a week at the time of recruitment, reside in the United States, and were 18 years or older. In terms of where the participants worked, 42.5% worked in labor industries, 25% as professionals, 15% were managers and 17.5% worked in other industries. These were categorized using the nine Employment Equity Opportunity (EEO) job categories (Carsen, 2021). When asked about individual meditation experience, 45% of the participants had no experience while 55% had at least some experience. As for compensation, participants had the option to electronically opt-in to win a \$100 Amazon gift card upon signing the consent form. To further incentivize active participation, those who opted-in and filled out all 10 meditation logs were entered to win an additional \$50 Amazon gift card. Those who wished to withdraw during the study can at any time could have done so without any repercussions.

Materials

The participants first filled out their demographic survey. These were questions such as identifying race, age, and industry/tenure of employment (see Appendix A). Responses were mainly for descriptive purposes. Additionally, participants were asked to complete personality and stress assessments at the beginning of the study.

Big Five Inventory (BFI)

The next survey that participants filled out at baseline in addition to demographic questions was the subscale Big Five Inventory (BFI). The BFI is a traditional measure used to uncover the degree of each of the five main personality traits. However, this study examined the two that closely relate to the perception of stress, which are conscientiousness, and neuroticism. These two have the opposite

effect on their reactivity to their environment (Vollrath & Torgersen, 1999). Answers for the BFI were scored using a 17-item scale (See Appendix B). Participants answered the extent to which they agree or disagree with statements relating to their personality on a Likert-type scale from 1 to 5, where 1 = Disagree Strongly and 5 = Agree Strongly (John & Srivastava, 1999). Thus, higher numbers indicate a greater degree of agreeableness. Questions 2 to 6 and 10, 17 are reversed with the lower number indicating a higher level of agreeableness and will be reverse-scored to be consistent with other items.

Perceived Stress Scale (PSS)

The perceived stress scale (PSS) is a 10-item scale (See Appendix C). These questions are scenario-based, instructing the participant to answer how they feel about certain work-related situations over the last two weeks. These situations do not change throughout the pre and post- test surveys. Participants answered how much stress they felt over a workplace scenario using a Likert-type scale from 0 to 4, with 0 = Never and 4 = Very Often. The higher the number, the greater degree of stress an individual has (Cohen et al., 1983). However, the point value for questions 4, 5, 7, 8 was reversed, with the lower circled number meaning a higher score for that question. At the end of two weeks, participants were asked to take the PSS questionnaire again to analyze the effect of the meditation practice on their stress.

Meditation Log

To ensure that participants fulfilled their meditation requirements, they were tasked to fill out a meditation log (See Appendix D). Participants answered the time, duration, and style of the meditation they used that day. There was also an optional section for participants to express any notable experiences they had while meditating that day. Responses for these open-ended questions were evaluated using thematic analysis, uncovering themes and common behaviors that were found throughout the participants' answers. Meditation logs were filled out each weekday, and participants had the option to meditate on both their days of work and their off days. However, they were encouraged to meditate and fill out their log each weekday, lasting a total of 10 entries. This system was executed through Qualtrics

email surveys and was sent out at 6:00 pm EST. Participants had a span of 12 hours to respond to each daily response. This procedure was orchestrated throughout the entirety of the two-week study.

Procedure

As previously mentioned, the location of the study was completely online. Participants were asked to meditate either just before or during their working hours on the days they work. On non-work days, they were asked to meditate before they start their day, or towards the end of the day. Meditation was captured as how often, and for what duration, the participants meditated for 10 days. This allowed participants to meditate as many times or as little as they chose to.

Participants could also choose which meditation style they wanted to engage in each day, they did not have to use the same style each day (FAM, OMM, LKM, or Mantra meditation). Each participant, regardless of meditation frequency, was required to fill out their daily meditation log.

The procedure began with the PI sending out a training video to the volunteer participants. This included the purpose of the study, styles of meditation they could choose from, how to complete meditation logs, and the ideal time to meditate. Participants had the option to meditate either on working or non-working days, as long as they answered the 10 meditation log entries. After signing the online consent form, participants filled out the two pre-test surveys along with demographic questions. These were the BFI, measuring the degree of neurotic and conscientiousness personality traits, and the PSS, uncovering how much perceived workplace stress they have experienced over the past two weeks. Once completed, participants began their meditation duties the following Monday. The type of meditation was up to the participants. They were free to choose any of the four main meditation practices previously mentioned in the paper. Having an autonomous option of which style to choose leads to a non-discriminatory method and openness to a meditation style that fits each participant.

The duration of each meditation had a minimum time of five minutes. During each weekday, the PI sent out an online meditation log, where participants wrote down the type, style, duration, and time

of their meditation. At the end of two weeks, the participants were sent the PSS again and were tasked to complete it. Lastly, the PI thanked the participants for their part in the effort and began the analysis stage of the study.

Results

The descriptive statistics for this study’s variables are presented in Table 1. There was no missing data for the demographic, stress, or personality assessments as all 40 participants completed those tasks. However, 27.5% of data from the meditation logs are missing, as some participants did not meditate during the two weeks.

Table 1

Descriptive Statistics for Study Variables.

	N	Mean	SD
Pre-test Stress	40	2.20	0.77
Post-test Stress	40	2.0	4.25
Conscientiousness	40	3.34	1.13
Neuroticism	40	3.38	0.65
Difference Score	40	2.10	4.17
Days Meditated	40	6.10	4.34
Time Meditated	40	82.05	76.35

The difference in pre-and post-test PSS scores was calculated using a difference score. That is, [pre-test PSS – post-test PSS] reflected potential reductions in stress across the two-week study period. Negative scores indicated stress increased and positive scores indicated stress decreased. Multiple regression analysis using the R software was used to assess the relationships of frequency of meditation (number of days meditated and total time spent meditating) as well as the two personality traits, neuroticism, and conscientiousness, on stress difference at pre-test compared to the post-test. Interactions between each personality variable and each frequency of meditation variable were analyzed to test hypotheses 2-3 regarding potential moderating effects of personality on the relationship between frequen-

cy of meditation and changes in stress from pre-test to post-test.

Furthermore, a qualitative analysis was conducted using a thematic analysis of the participants' meditation log entries. The qualitative data came via three opened ended questions at the bottom of each survey, and it served a multitude of purposes. First and foremost, the analysis was used to uncover trends in how the participants thought and behaved during their time meditating. This may assist future researchers who want to find ways to improve the quality of the participants' meditation sessions. Overall, capturing open-ended qualitative responses helps provide a clearer understanding of the participant's meditation experience that is not evident through quantitative metrics. Throughout the study, a total of 247 meditation log entries were completed. The total meditation time of all participants was 65 hours and 22 minutes, with the average meditation session lasting 16 minutes. Just as the frequency of meditation was autonomously given to the participants, so too was the type of meditation. Using this format, 41.7% chose FAM, 21.46% chose LKM, 19.03% chose Mantra, and 17.81% chose OMM. These percentages were not constant over the ten days, as participants were allowed to choose their preferred meditation style each day of the study, and some participants did not use the same meditation style throughout.

Each meditation log had the same opened ended questions. First, participants were asked, "What did you think about when meditating today?" (See Appendix D). Common answers were that participants used this time to reflect on their day, wanted to release negative thoughts, and imagined a past memory of theirs. For the second question, they were asked, "If applicable, why did you choose this meditation style today?" (See Appendix D). Major takeaways were that participants chose that specific meditation style because they simply liked performing that style before, found it calming, and easy to perform. Lastly, participants were asked, "In today's meditation, what went well and what are things you can improve on?" (See Appendix D). For the positives, participants found that they were able to focus and relax, able to plan for their future, and able to redirect their thoughts back to the meditation exercise. For things that can be worked on, it centered around the problem that some meditation ses-

sions were small in duration. Common explanations were that their environment of meditation was very distracting and thus they were unable to properly relax. Collecting this information can help future researchers comprise new strategies to increase the quality of the participants' meditation sessions.

It was predicted that the more frequently participants would meditate during the two-week intervention, the lower their perceived stress would be by the final post-assessment. To calculate the overall changes in participant stress, a difference score was used to compare the pre and post-test. Those with negative scores indicated that stress increased after the two weeks while positive scores meant that stress decreased. Looking at the 40 total participants used in this study, the sum difference score was +84, indicating that stress largely decreased at the post-test assessment. Additional analyses took place using multiple regression in R software (Table 2).

Results support the first hypothesis, as meditation frequency had a statistically significant impact on the reduction of perceived stress. These results highlight the strength of the individualized meditation program as well as the importance of meditation repetition to warrant limiting perceived stress levels.

The regression analyses involved using two different meditation frequency variables predictors of stress reduction. The regression results in Table 2 involve using meditation frequency as the total amount of days the participants meditated.

Table 2

The Moderating Effect of Conscientiousness (C) and Neuroticism (N) on the Relationship between Meditation Frequency (Days Meditated) and Stress Reduction.

Predictors	Stress Reduction		
	B	β	SE
Meditation Frequency (Days Meditated)	.36	.37*	.15
Conscientiousness	.13	.11	.23
Neuroticism	.01	.02	.15
C X Meditation Frequency	-.58	-.16	.60
N X Meditation Frequency	.01	.04	.04
R ²			.04

Note. $N = 40$. B=unstandardized regression coefficients.

β = standardized regression coefficients. SE = standard error.

* $p < .05$. R² = amount of variance in stress reduction explained by all variables in the model.

Table 3 has the meditation frequency variable defined as the amount of time, in minutes, spent meditating over the two weeks. Results from the regression analysis are as follows.

Table 3

The Moderating Effect of Conscientiousness (C) and Neuroticism (N) on the Relationship between Meditation Frequency (Time Meditated) and Stress Reduction.

Stress Reduction			
Predictors	B	β	SE
Meditation Frequency (Time Meditated)	-.001	-.02	.01
Conscientiousness	.18	.14	.25
Neuroticism	-.01	-.01	.17
C X Meditation Frequency	-.40	-.11	.65
N X Meditation Frequency	.02	.08	.04
	R ²		.04

Note. $N = 40$. B=unstandardized regression coefficients.

β = standardized regression coefficients. S.E. = standard error. All relationships were non-significant (all were $p > .05$).

R² = amount of variance in stress reduction explained by all variables in the model.

Hypotheses 2 and 3 investigated the roles of conscientiousness and neuroticism personality traits and their impact on the overall meditation program effectiveness. It was predicted that higher conscientiousness would lead to a weaker relationship between meditation frequency and reduction in stress, limiting the strength of the intervention. This is because high conscientiousness individuals are already goal-centric and focused, not letting outside pressure or stress derail their productivity (Murphy et al., 2013). Results showed that conscientiousness had no significant impact on that relationship. As for neuroticism, it was believed that a higher level of neurotic personality traits would increase the strength of the intervention. This is because high neurotic personalities are more likely to succumb to stressful situations (Vollrath & Torgersen 1995), and this program was aimed at strengthening that skill

set through meditation. Yet, results show neuroticism also had no significant effect on differences in stress. Both personality hypotheses were not supported, indicating that personality did not play a major factor in the intervention outcome. Participants' ability to meditate as frequently as they wished to impact their changes in stress was not altered nor influenced by their personality traits.

Discussion

Contributions

This study contributed to our understanding of the beneficial effects of meditation on workplace stress. Results showed that higher meditation frequency was statistically significant in lowering participants' perceived stress over two weeks. This supplements previous scientific work highlighting the positive impact meditation can have on one's wellbeing, including workplace stress (Walsh et al., 2019). Additionally, this study supports the use of meditation and its role in helping to reduce work-related stress (Kersemaekers et al., 2018).

However, the current literature on meditation's effects on workplace stress is limited to studies that involve a broad program in which all employees engage in the same meditation frequency and style (Allexandre et al., 2016 & Kersemaekers, et al., 2018). In the current study, we added to that literature by allowing employees to meditate as frequently and as long as they wished, and to choose one of four meditation styles that we trained them in conducting for themselves. Thus, our results show employers that they might have good results if they encourage employees to engage in meditation frequently and allow them other individualized aspects of meditation programs like choice of style. This idea is similar to the findings of Zeng et al., (2017) which highlight the importance of repetition in meditation use.

Additionally, although academic research provides a basis for using conscientiousness and neuroticism personality traits when assessing reactions to or effects of stress in social environments including the workplace (Jackson et al., 2010; Widiger & Oltmanns, 2017), the current study's results did not support the notion that personality makes a difference in meditation frequency's effects on stress. From

a practical standpoint, these findings encourage organizational practitioners to give employees more autonomy when it comes to meditating. That is, they may give employees the option to meditate as frequently and give them the choice to choose the most appropriate meditation style for them. The results indicate that a higher frequency of meditation is more effective for seeing lessened stress over time and practitioners may give employees the option of choosing whichever frequency they find most suitable for themselves.

Limitations and Directions for Future Research

There were several limitations in this study. First and foremost, the sample size (40) of the study was small. This resulted in a low statistical power, which limited the overall detection of potential relationships hypothesized in the study.

Another limiting aspect of the sample was the lack of occupational diversity. Around 67.7% of all participants came from two of the nine main categories of occupations in the US (Carsen, 2021). As a result of limited occupational diversity, external validity becomes limited in that our sample did not represent a large range of employees in different positions and industries.

Another point limitation might be the duration of the study (only two weeks). While participants in this study engaged in meditation practices for two weeks, the impact on longer-term changes in stress from such interventions is an area often overlooked by researchers (Herr et al., 2018). Thus, limiting the study to just two weeks negated the chance of observing the long-term impact of meditation practice on mental well-being. There are two areas that future studies can address, the first one being diversifying and increasing the pool of participants to better represent all working Americans. The other suggestion for future research is to investigate the long-term effect of meditation, spreading out the study to see how stress would change in a period beyond two weeks.

Another limitation was participants' concerns over not finding an appropriate time to meditate. Some noted in the open-ended section of the meditation logs that they either forgot to or did not have enough time to meditate that day. One reason for this was because in the training video that all partic-

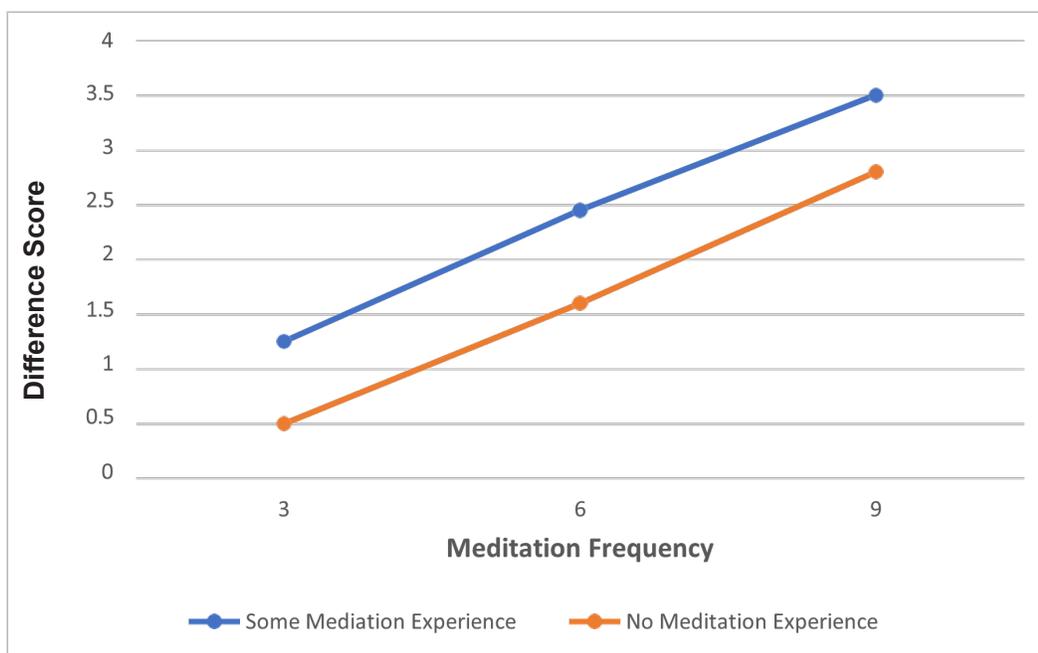
participants saw, the time to meditate was very broad and general. It said that they should look to meditate either just before or during their working hours on the days they work. On non-work days, they were asked to meditate before they start their day, or towards the end of the day. Two solutions may limit this problem in future studies. One is to send all participants an email reminder at noon each weekday to remind them to meditate that day. This way, it helps to alert and remind them to meditate. A second strategy is to give a specific time window in terms of when to meditate. This may specifically be during the participants' lunch breaks, or during a 3-hour window which should help to narrow down the wide variety of meditation times recorded in the logs. The fifth limitation was the attrition in the overall study's design. Asking to perform a daily activity for ten weekdays in a row was a challenge for some participants. There were instances where those who completed their first three or four meditation logs did not fill out the remaining ones. As such, the range in meditation frequency was dispersed, as some meditated zero times while others meditated 10 times. One way to battle this problem is to have guaranteed incentives for all participants. The current study had two randomized chances of winning a monetary reward and thus, only five percent of the entire participant group received any compensation. In future studies, having a base pay rate for all participants may contribute to keeping the overall attrition rate down. The sixth and final limitation was the emotional impact of the external conflict in Ukraine.

Participants were set up in three groups depending on the time in which they enrolled in the study. Groups two and three comprised roughly 40% of the entire participant count and these groups filled out their meditation logs during Russia's conflict with neighboring Ukraine. Although the battle is not on US soil, the emotional impact has stretched across the world, and this may have influenced participants' stress levels. There is nothing in the way of improving this external influence in future studies, but it is something worth noting.

Some additional directions this study can take revolves around the contrasting frequencies of meditation between Eastern and Western cultures. In eastern countries like China and India, there is a

grounded perception to perceive meditation as an essential part of an individual's life, resulting in very-high frequencies throughout the week (Suchday, 2014). However, in western countries like the US and the UK, meditation is not perceived as the essential route for improving mental health. Instead, there are popular alternatives such as exercising and eating healthy that individuals use to mitigate unwanted stress (Suchday, 2014). This contrast in meditation frequencies and overall experience between western and eastern cultures is an area that is intriguing to explore in future studies. As Figure 1 illustrates, in the current study, those with some meditation experience experienced greater differences in stress scores compared to those with no experience.

Figure 1:
Meditation Experience on Changes in Stress



Note. Difference score = Pre-test stress minus post-test stress. Meditation frequency = The number of times participants meditated in two weeks.

In future studies, comparing the more frequently practiced meditation use of the east to a lesser performed meditation of the west would help to expand the external validity of the study. Another direction that future studies may look to explore is the time of meditation by participants. Perhaps meditating right before or during the workday can have a significant impact on stress levels compared to those who meditate after work or as they are about to rest for the day. These two avenues both look to expand upon this current study, exploring new ways to improve the internal and external validity of this work.

Summary

This study examined a personal approach to handling meditation as means to address workplace stress. By allowing participants to choose how often and what style of meditation they may practice, it gave them the flexibility to perform the meditation each day over two weeks in whichever way they felt effective. The more frequently participants meditated, the more their stress was reduced over the two-week study period. Quantitative data suggests that many participants did choose a variety of meditation styles rather than sticking with just one. Also, qualitative data suggest they enjoyed having a choice of meditation style. Future studies can perhaps use these results as guidance in creating meditation programs that allow for flexibility, choice, and autonomy.

REFERENCES

- Allexandre, D., Bernstein, A. M., Walker, E., Hunter, J., Roizen, M. F., & Morledge, T. J. (2016). A web-based mindfulness stress management program in a corporate call center: A randomized clinical trial to evaluate the added benefit of onsite group support. *Journal of Occupational and Environmental Medicine*, 58(3), 254–264. <https://doi.org/10.1097/JOM.0000000000000680>
- Birhanu, M., Gebrekidan, B., Tesefa, G., & Tareke, M. (2018). Workload determines workplace stress among health professionals working in Felege-Hiwot Referral Hospital, Bahir Dar, northwest Ethiopia. *Journal of environmental and public health*, 2018, 6286010. <https://doi.org/10.1155/2018/6286010>
- Burke, A., Lam, C. N., Stussman, B., & Yang, H. (2017). Prevalence and patterns of use of mantra, mindfulness and spiritual meditation among adults in the United States. *BMC complementary and alternative medicine*, 17(1), 316. <https://doi.org/10.1186/s12906-017-1827-8>
- Carsen, J. (2021, July 7). *Understanding EEO job categories for the EEO-1 report*. HR Daily Advisor. Retrieved April 27, 2022, from <https://hrdailyadvisor.blr.com/2012/08/07/understanding-eeo-job-categories-for-the-eeo-1-report/>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385–396. <https://doi.org/10.2307/2136404>
- Hammen, C., Kim, E. Y., Eberhart, N. K., & Brennan, P. A. (2009). Chronic and acute stress and the prediction of major depression in women. *Depression and Anxiety*, 26(8), 718–723. <https://doi.org/10.1002/da.20571>
- Hassard, J., Teoh, K., Visockaite, G., Dewe, P., & Cox, T. (2018). The cost of work-related stress to society: A systematic review. *Journal of Occupational Health Psychology*, 23(1), 1–17. <https://doi.org/10.1037/ocp0000069>
- Herr, R. M., Barrech, A., Riedel, N., Gündel, H., Angerer, P., & Li, J. (2018). Long-term ef-

REFERENCES

- fectiveness of stress management at work: Effects of the changes in perceived stress reactivity on mental health and sleep problems seven years later. *International Journal of Environmental Research and Public Health*, 15(2), 255. <https://doi.org/10.3390/ijerph15020255>
- Jackson, J. J., Wood, D., Bogg, T., Walton, K. E., Harms, P. D., & Roberts, B. W. (2010). What do conscientious people do? Development and validation of the behavioral indicators of conscientiousness (BIC). *Journal of Research in Personality*, 44(4), 501–511. <https://doi.org/10.1016/j.jrp.2010.06.005>
- John, O. P., & Srivastava, S. (1999). The big-five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of Personality: Theory and research* (Vol. 2, pp. 102–138). New York: Guilford Press
- Kersemakers, W., Rupprecht, S., Wittmann, M., Tamdjidi, C., Falke, P., Donders, R., Speckens, A., & Kohls, N. (2018). A workplace mindfulness intervention may be associated with improved psychological well-being and productivity. A preliminary field study in a company setting. *Frontiers in Psychology*, 9, 195. <https://doi.org/10.3389/fpsyg.2018.00195>
- Lindsay, E. K., Young, S., Brown, K. W., Smyth, J. M., & Creswell, J. D. (2019). Mindfulness training reduces loneliness and increases social contact in a randomized controlled trial. *Proceedings of the National Academy of Sciences of the United States of America*, 116(9), 3488–3493. <https://doi.org/10.1073/pnas.1813588116>
- Lippelt, D. P., Hommel, B., & Colzato, L. S. (2014). Focused attention, open monitoring and loving kindness meditation: Effects on attention, conflict monitoring, and creativity - A review. *Frontiers in Psychology*, 5, 1083. <https://doi.org/10.3389/fpsyg.2014.01083>
- Lynch, J., Prihodova, L., Dunne, P. J., Carroll, Á., Walsh, C., McMahon, G., & White, B. (2018, September 21). Mantra meditation for mental health in the general population: A systematic review. *European Journal of Integrative Medicine*. Retrieved January 5, 2022,

REFERENCES

- from <https://www.sciencedirect.com/science/article/pii/S1876382018304591>
- Matko, K., & Sedlmeier, P. (2019). What is meditation? Proposing an empirically derived classification system. *Frontiers in psychology, 10*, 2276. <https://doi.org/10.3389/fpsyg.2019.02276>
- Maulik P. K. (2017). Workplace stress: A neglected aspect of mental health wellbeing. *The Indian journal of Medical Research, 146*(4), 441–444. https://doi.org/10.4103/ijmr.IJMR_1298_17
- Mishra, B., Mehta, S., Sinha, N. D., Shukla, S. K., Ahmed, N., & Kawatra, A. (2011). Evaluation of work place stress in health university workers: A study from rural India. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine, 36*(1), 39–44. <https://doi.org/10.4103/0970-0218.80792>
- Moreno Fortes, A., Tian, L., & Huebner, E. S. (2020). Occupational stress and employees complete mental health: A cross-cultural empirical study. *International Journal of Environmental Research and Public Health, 17*(10), 3629. <https://doi.org/10.3390/ijerph17103629>
- Murphy, M. L., Miller, G. E., & Wrosch, C. (2013). Conscientiousness and stress exposure and reactivity: a prospective study of adolescent females. *Journal of Behavioral Medicine, 36*(2), 153–164. <https://doi.org/10.1007/s10865-012-9408-2>
- Raypool, C. (2020, August 18). Mantra meditation: Benefits, how to try it, and more. *Healthline*. Retrieved January 5, 2022, from <https://www.healthline.com/health/mantra-meditation#how-to>
- Rosellini, A. J., & Brown, T. A. (2011). The NEO five-factor inventory: Latent structure and relationships with dimensions of anxiety and depressive disorders in a large clinical sample. *Assessment, 18*(1), 27–38. <https://doi.org/10.1177/1073191110382848>

REFERENCES

- Ryan, R. M., Deci, E. L., Vansteenkiste, M., & Soenens, B. (2021). Building a science of motivated persons: Self-determination theory's empirical approach to human experience and the regulation of behavior. *Motivation Science*, 7(2), 97–110. <https://doi.org/10.1037/mot0000194>
- Scott, E. (2020, February 11). How to practice loving kindness meditation. *Verywell Mind*. Retrieved January 5, 2022, from <https://www.verywellmind.com/how-to-practice-loving-kindness-meditation-3144786>
- Scott, E. (2021, September 19). How to practice focused meditation in just 30 minutes. *Verywell Mind*. Retrieved January 5, 2022, from <https://www.verywellmind.com/practice-focused-meditation-3144785>
- Sunchay, S., Mayson, S. J., Klepper, J., Meyer, H., & Dzoik, M. (2014). *Apa PsycNet*. American Psychological Association. Retrieved April 13, 2022, from <https://psycnet.apa.org/record/2014-13600-004>
- Vollrath, M., & Torgersen, S. (1999). Personality types and coping. *Personality and Individual Differences*, 29(2). [https://doi.org/10.1016/S0191-8869\(99\)00199-3](https://doi.org/10.1016/S0191-8869(99)00199-3)
- Vollrath, M., Torgersen, S., & Alnaes, R. (1995). Personality as long-term predictor of coping. *Personality and Individual Differences*, 18, 117-125. [https://doi.org/10.1016/0191-8869\(94\)00110-E](https://doi.org/10.1016/0191-8869(94)00110-E)
- Voss, J. (2018, October 4). Meditation tips for investment professionals: Open-monitoring meditation. *CFA Institute Enterprising Investor*. Retrieved January 5, 2022, from <https://blogs.cfainstitute.org/investor/2017/03/01/meditation-tips-for-investment-professionals-open-monitoring-meditation/>
- Walsh, K. M., Saab, B. J., & Farb, N. A. (2019). Effects of a mindfulness meditation app on subjective well-being: Active randomized controlled trial and experience sampling study. *JMIR Mental Health*, 6(1), e10844. <https://doi.org/10.2196/10844>

REFERENCES

- Wielgosz, J., Goldberg, S. B., Kral, T., Dunne, J. D., & Davidson, R. J. (2019). Mindfulness meditation and psychopathology. *Annual Review of Clinical Psychology, 15*, 285–316. <https://doi.org/10.1146/annurev-clinpsy-021815-093423>
- Widiger, T. A., & Oltmanns, J. R. (2017). Neuroticism is a fundamental domain of personality with enormous public health implications. *World psychiatry : Official Journal of the World Psychiatric Association (WPA), 16*(2), 144–145. <https://doi.org/10.1002/wps.20411>
- Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T. P., & Sahebkar, A. (2017). The impact of stress on body function: A review. *EXCLI journal, 16*, 1057–1072. <https://doi.org/10.17179/excli2017-480>
- Zeng, X., Chio, F. H., Oei, T. P., Leung, F. Y., & Liu, X. (2017). A systematic review of associations between amount of meditation practice and outcomes in interventions using the four immeasurable meditations. *Frontiers in Psychology, 8*, 141. <https://doi.org/10.3389/fpsyg.2017.00141>

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