PSY 222 Project One

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Topic: The relationship between meditation and stress in U.S. workers

1. Determine the plan's **background introduction**. Include the following details:
    - The title of the plan
    - Summary of three relevant empirical and scholarly research studies for the plan. Each summary should be about 150 to 250 words.

    The title of this research plan is: The relationship between meditation and stress in U.S. workers.

    Bostock, S., Crosswell, A. D., Prather, A. A., & Steptoe, A. (2019). Mindfulness on-the-go: Effects of a mindfulness meditation app on work stress and well-being. *Journal of Occupational Health Psychology*, *24*(1), 127–138. https://doi-org.ezproxy.snhu.edu/10.1037/ocp0000118

    The purpose of this study was to determine if an app-based mindfulness training program would decrease factors related to work stress. The participants in this study were 229 employees from two different countries in the U.K.. One company was a pharmaceutical firm, and the other was a high-tech company. All participants in the study reported that they had work-related stress. Participants were excluded if they self-reported having depression, hypertension, heart disease, or cancer because the treatment could interfere with the study results. A baseline was set using psychosocial questionnaires. The app, Headspace, was used for the research study. The experimental group used the Headspace app to complete the mindfulness training program. The program had 45 meditation sessions that took about 10 to 20 minutes to finish. The control group was given a link to the National Health Service online advice for work stress. The researchers measured the control group for naturally occurring changes in well-being and distress. The psychosocial measures were well-being (measured using the Warwick Edinburgh Mental Well-being Scale), psychological distress (measured using the subscales of the Hospital Anxiety and Depression Scale), job strain (measured using (measured using the Whitehall II Study Questionnaire), workplace social support (measured using five statements ranked on a 4-point scale), and mindfulness (measured using seven items from the Freiburg Mindfulness Inventory). The physiological measurement was measured using self-monitoring devices. The Omron R2 wrist BP monitor was used to record the participants BP five times a day during work hours. Chi-square and *t* tests were used to compare the baseline demographic and work characteristics. The Alpha's

were set at 0.05. Psychosocial outcomes were analyzed using SPSS Version 24. The control group was divided for measurement based on how many meditation sessions were completed. If the participant finished more than 10 meditation sessions using the Headspace App, they reported greater improvement in their in well-being, daily positive emotions, anxiety symptoms, depressive symptoms, job strain, and workplace social support. This study did have a few limitations. The study relied on self-administered BP readings, the study did not follow-up with the participants after the study to see if the participants continued to use the app, and teaching self-meditation may lead to individual's thinking they have to reduce their stress on their own instead of the workplace helping every employee lower and manage their stress. The research study concluded that a meditation app, that does not teach about how to handle stress at work, still helps improve an individual's positivity, amount of work stress, and workplace social support.

Tung, Y.-H., & Hsieh, J.-C. (2019). Mindfulness endorses healthcare perspective by business management: An empirical study of an employee. *Journal of Economics, Business and Management*, *7*(3), 126–131. https://doi.org/10.18178/joebm.2019.7.3.594

The purpose of the research study was to determine what the heart rate mean and standard deviation before and during mediation is and is there a connection between the heart rate before mediation and the heart rate after meditation. The researchers recorded the heart rate of a healthy employee before and after a 15-minute meditation during a break in the workplace. The heart rate of the employee was measured 15 minutes before the meditation session and was recorded during the meditation session. Polar H7 was the HR monitor that was used in this particular study. Heart rate before and during mindfulness were collected for 30 days. The data was analyzed using the SPSS 20.0 and the Pearson Correlation statistics method. The statistics of the study displayed that both the mean and the standard deviation of the heart rate decreased when compared to the data collected prior to the meditation. Other measures included self-reported stress, feelings of fatigue, headaches, and backache before and after meditation. A limitation of this study is that only one participant was involved, so the findings cannot be generalized. It is also unclear if the heart rate measurements and meditation were collected at the same time every day. It is possible that different times during the day could affect the HR measurements. The last limitation is that the data collected could not be compared to any other data (e.g. another study). The data collected in this study was recorded from one participant and was compared to the measurements already collected during this study. The study concluded that meditation could make an individual feel more comfortable, improve headaches and mood, and reduce fatigue and stress.

Elder, C., Nidich, S., Moriarty, F., & Nidich, R. (2014). Effect of transcendental meditation on employee stress, depression, and burnout: A randomized controlled study. *Permanente Journal*, *18*(1), 19–23. https://doi-org.ezproxy.snhu.edu/10.7812/TPP/13-102

The purpose of this research study was to understand the effects of transcendental meditation on employee stress. Transcendental meditation is used to reduce stress and is completed twice a day for about 20 minutes. 40 teachers working in therapeutic schools for children with behavioral problems were participants in the study. The participants were randomized into two groups. One group was taught the transcendental meditation technique in a 7-step course. They were told to practice the technique at home twice a day for about 15-20 minutes. The second group continued their daily schedule and did not use the transcendental meditation. The study took 4 months to complete. The study measured stress, depression, and burnout at the beginning of the study and after the study. Stress was measured using the Perceived Stress Scale. The Mental Inventory-5 was used to measure depressive symptoms. Burnout was measured using the Maslach Burnout Inventory-Educators Survey. Self-reporting was used to report if the participants competed the transcendental meditation twice a day for the required amount of time. Multivariate analysis of covariance and Univariate F tests were used to determine effects of the transcendental meditation. 100% of the participants in the experimental group meditated at least once a day. The meditation was effective in decreasing stress, depressive symptoms, and burnout. The limitations of the study include a small population of participants (all from one location) and bias in self-reports. Overall, the transcendental meditation has been proven effective.

2. Develop a clear and specific **research question** that is relevant to the three research studies you chose. Your response should be about 25 words.

   How effective are meditation apps at reducing work related stress in U.S. workers compared to in-person meditation sessions and no meditation sessions?

3. Develop a clear, specific, and testable **hypothesis** that corresponds to your research question. Your response should be about 25 words. Consider the following in your hypothesis:
   - Your hypothesis should be informed by the claim you are making.

   Meditation apps will significantly reduce burnout rates, depressive symptoms, anxiety symptoms, psychological distress, stress, and heart rate while increasing well-being and

workplace social support, among U.S. workers, compared to in-person meditation sessions and no meditation sessions.

4. Describe aspects of **sampling** that you would want to consider while acquiring participants for your study. Your response should be about 100 words.

   The participants for the study will be 18 years of age or older, from various workplaces. They will be invited to participate in the study via email. Individuals who receive an invite are encouraged to volunteer themselves for the study. Therefore, all participants will be volunteers in the study. Ethical guidelines will be followed throughout the study to ensure the safety and well-being of each participant. Participants will be screened for depression, hypertension, heart disease, and cancer using self-reporting surveys. If participants have any of those, they will be excluded from the study because they could interfere with the measurements. Participants will have to self-report having work related stress in order to be included in the study (experiencing work related stress is an inclusion criterion). The participants will be randomly assigned to one of the three groups. One group (experimental) will participate in meditation sessions via an app, one group (experimental) will participate in in-person meditation sessions, and one group (control) will not make any changes in their daily activities.

5. Select a **design** (experimental or correlational) for your proposed study that aligns with the research question and hypothesis. Your response should be about 100 words. Include the following details:
   - Explain why you selected this design.
   - Identify conceptual variables that align with the research question and hypothesis.

   The design for this study will be experimental. I selected the experimental design because I will be manipulating variables and comparing them to the control variables. The purpose of this study is to determine if meditation apps are more efficient in reducing stress in U.S. workers compared to in-person meditation sessions and no meditation sessions. A correlation study only looks at statistics to find if there are any links to the variables and it does not involve manipulating any variables. This study will have two experimental groups and one control group. The two experimental groups includes using a meditation app and in-person meditation sessions. The control group includes participants not making any changes in their daily routines. Prior to being randomized to a group, data will be collected from the participants measuring their burnout rates, depressive symptoms, anxiety symptoms, psychological distress, stress, heart rate, well-being, and workplace social support.

6. Select a **measure** to operationally define each of your conceptual variables. Your response should be about 100 words per variable. Include the following details:
    - As you select a measure, also state whether it uses natural/laboratory observations, surveys, objective/physiological measures, interviews, etc.
    - For each variable you measure, identify its scale of measurement.

    I have chosen the following variables to measure in this proposed research study.
    Burnout rates: I will use the Maslach Burnout Inventory (MBI) to measure the burnout rates of the participants. The inventory is the most common and has good reliability and validity. The inventory measures 3 scales: emotional exhaustion, depersonalization, and decreased sense of personal accomplishment (Poghosyan, Aiken, & Sloane, 2010, para. 2). The three scales consist of 22 items, each item is ranked on a 7-point scale. Participants rank their emotions somewhere from "never" to "few times a week" (Poghosyan, Aiken, & Sloane, 2010, para. 17). The participants in the study will complete the Maslach Burnout Inventory before and after the study to determine if meditation decreases burnout rates. The scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3).
    Depressive symptoms: I will use The Center for Epidemiological Studies-Depression (CES-D). The self-report questionnaire includes 20-items. Each item is on a scale from 0 to 3. 0 being "rarely, or none of the time", to 3 being "most or all of the time". The questionnaire is scored out of 60. The higher the score, the more depressive symptoms that individual has. If participants score higher than 16, it is considered that they are at risk for depression. (American Psychological Association, 2011, paras. 1-2). However, any participants who have depression and are receiving treatment will be excluded from the study to avoid interfering with the results. The scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3). The participants in the study will complete the CES-D before and after the study to determine if meditation decreases depressive symptoms.
    Anxiety symptoms: I will measure anxiety symptoms using the Beck Anxiety Inventory (BAI). The test is reliable and has good validity. The inventory consists of 21 items which are scaled from 0 to 3. 0 being "not at all" to 3 being "severely-it bothered me a lot". The score is totaled by calculating the sum of the 21 items. If the score is between 0-21, the individual has low anxiety. If the score is between 22-35, the individual has moderate anxiety. And if the score is 36 or higher, the individual has potentially concerning levels of anxiety (*Beck Anxiety Inventory (BAI),* n.d., para. 2-5). The scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3). The participants in the study will complete the BAI before and after the study to determine if meditation decreases anxiety symptoms.
    Psychological distress: In will measure psychological distress using the Kessler Psychological Stress Scale (K10). The scale includes 10 items that are scored from 1 to 5.

1 being "none of the time" to 5 being "all of the time". The sum of the scores determine the likelihood of having a mental disorder/psychological distress. If the score is between 10-19, the individual seems to be well. If the score is between 20-24, the individual is likely to have a mild disorder. If the score is between 25-29, the individual is likely to have a moderate disorder. And if the score is between 30-50, the individual is likely to have a severe disorder (*Kessler Psychological Distress Scale (K10),* n.d., pp. 1). Participants must have a score of 24 to be included in the study. The scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3). The participants in the study will complete the K10 before and after the study to determine if meditation decreases psychological distress.

Stress: To measure stress, I will be using the Perceived Stress Scale (PSS). The scale is the most commonly used tool to measure stress. The questions are easy to understand and can be used in for the general public. The scale consists of 10 questions that are scored from 0 to 4. 0 meaning "never" and 4 meaning "very often". To score obtain an overall score, responses for questions 4, 5, 7, and 8 are reversed (e.g., 0=4, 1=3, etc.). Then the scored for all 10 questions are summed up. The score is totaled out of 40 points (Cohen, 1994, paras. 1-5). The higher the score, the more perceived stress there is. Participants must have a score of 17 or higher to be included in the study. The scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3). The participants in the study will complete the PSS before and after the study to determine if meditation decreases stress.

Well-being: I will measure well-being by using the Ryff Scales of Psychological Well-being. I will be using the medium version of the Ryff Scales because the long version is too long, and the short version is statistically unreliable. The Ryff Scales measure 6 different facets: self-acceptance, establishment of quality ties to others, sense of autonomy in thought and action, ability to manage complex environments to suit personal needs and values, pursuit of meaningful goals and a sense of purpose in life, and continued growth and development as a person. The scale consists of 54 questions are scored from 1-6. 1 meaning "strong disagreement" and 6 being "strong agreement. Some of the questions are reversed scored in order to determine the overall score and to allow the interpretation of the score to be the lower the score the more the participant struggles with feeling comfortable (Seifert, 2005, para. 1). The scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3). The participants in the study will complete the Ryff Scales before and after the study to determine if meditation increases well-being.

Workplace social support: I will measure workplace social support by using the Perceived Social Support Scale (PSSS). The PSSS has high validity and maintains good consistency. The scale includes 20 items which are scored from 0-2. 0 being "I don't know" and 2 being "yes". The answers are summed up and a higher score reflects greater amount of social support. (Nick, Cole, Cho, Smith, & et al., 2018, para. 18). The

scale of measurement is interval because "the numerals represent equal intervals (distances) between levels, and... there is no 'true zero'" (Morling, 2020, p. 4.3). The participants in the study will complete the PSSS before and after the study to determine if meditation increases well-being.
Heart rate: The Polar H7 will be used to measure heart rates in this study. Heart rate will be recorded 5 times a day, at the same times, during the study. The scale of measurement is ratio because the "... measurement applies when the numerals of a quantitative variable have equal intervals and when the value of 0 truly means 'none' or 'nothing' of the variable being measured" (Morling, 2020, p. 4.3). For example, in this study, I would measure heartbeats per minute. The participants in the study will compare their heart rates before and after the study to determine if meditation decreases their heart rates.

7. Describe your type of **analysis** and the *p* value required to support your hypothesis. Your response should be about 50 words.

   My hypothesis is that meditation apps will significantly reduce burnout rates, depressive symptoms, anxiety symptoms, psychological distress, stress, and heart rate while increasing well-being and workplace social support of U.S. workers compared to in-person meditation sessions and no meditation sessions. To support my hypothesis of meditation apps have more positive effects on stress among U.S. workers, the *p* value should be 0.05 or less. I will use a chi-square test to determine if my hypothesis is correct.

8. Develop the plan's **discussion** content. Your response should be about 250 to 350 words. Include the following details:
   - What you would expect to be the main finding of your study
   - How you would know if your hypothesis was supported
   - The potential implications of the findings
   - A possible limitation of your proposed study
   - Directions for future research

   I would expect the main finding of my study to be that meditation apps statistically show more benefits than in-person meditation sessions and no meditation sessions. I would know if my hypothesis was supported if when I gathered the participants results from the various questionnaires and heart rates before, during, and after the study; the statistics showed a larger decrease in burnout rates, depressive symptoms, anxiety symptoms, psychological distress, stress, and heart rate as well as an increase in well-being and workplace social support in the group that participated in meditation sessions via an app than the group that participated in in-person meditation session and the group that had no participation in meditation sessions. I would place all of the results

from the questionnaires and heart rate recordings into a chi-square test and if the *p* value were 0.05 or less, I would know my hypothesis was supported. Potential implication of the findings can be how meditation sessions are designed and implemented in the workplace. If the hypothesis is supported and meditations though apps are the most successful at relieving work related stress, than businesses can recommend their employees to download meditation apps and any expenses for the app can be paid for by the company. Knowing which methods of meditation are the most effective can help therapists implement those meditation strategies to their clients. Researchers can take the findings of this study to improve the design of the study. A possible limitation for my proposed study is the majority of my measurements for my variables involve self-report questionnaires. The use of self-report questionnaires opens the door for biases and influence the effectiveness of the data collected. There could also be the presence of underlying variables that were not accounted for by the questionnaires that can affect the outcome of the study. Once researchers know which meditation strategy is the most efficient in reducing stress, they can focus on how to better improve the meditation strategy. For example, if the hypothesis is supported, researchers can develop a study to determine how to better improve meditation sessions through the app. A study could be done comparing different meditation apps to see which one is the most effective and easy to use among U.S. workers. A good future finding would be to determine what aspects of a meditation app make it a useful meditation app.

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