

# Meditation and Reducing Anxiety

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## Hypothesis

If meditation can be measured to reduce overproduction and release of norepinephrine, then it may be said to reduce levels of daily anxiety and irrational stress.

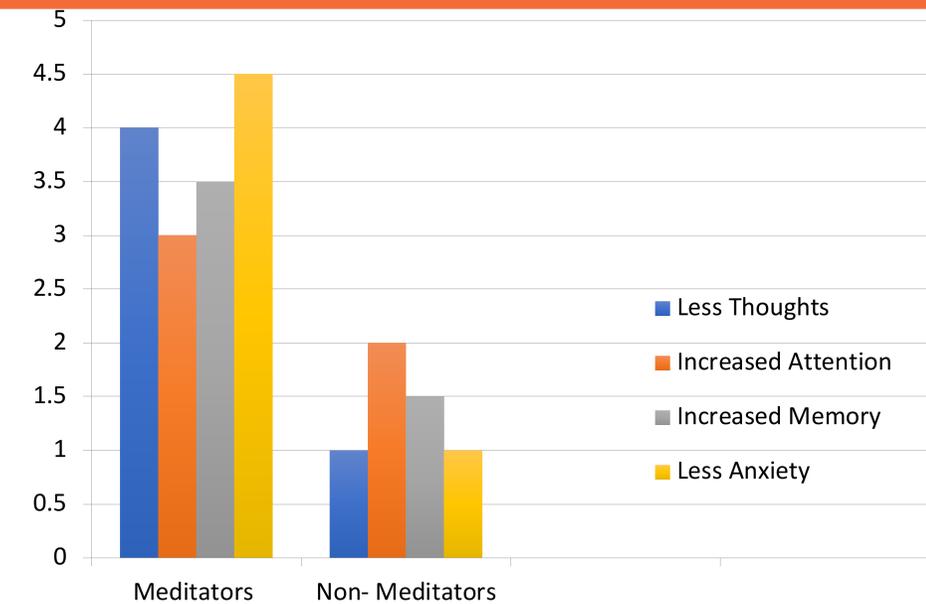
## Introduction

Meditation is a form of mental training that works on decreasing the number of thoughts produced, inhibiting the practice of calming the mind and focusing attention, while strengthening neural networks and improving other cognitive capabilities such as memory and self-regulation skills (Renjen, Chaudhri 2017). A reduction in the number of thoughts being produced allows for calming of the mind, and the ability to allow yourself to focus attention more easily. EEG scanning suggests increased activity in the cerebral cortex and other regions pertaining to emotional regulation and information processing skills in trained meditators (Zeidan et. al 2014). EEG and MRI scan results detect structural and functional changes after meditation training; these results claim that the focusing of attention used in meditation training leads to the increase or decrease of specific brain waves (Kaur, Singh, Uppal 2017). Increased activity in the anterior cingulate (responsible for attention) related to meditation training is associated with lower levels of peripheral norepinephrine production, and activates an increase in c- NE, which enhances working memory and attention (Craigmyle 2013). These findings will contribute to this research because they define a clear relationship between meditation and reduced daily anxiety, most likely due to improvement of cognitive functioning such as attention, memory, and self-regulation skills.

## Methods

A randomized list of names will be generated to create a population that will receive a survey via e-mail, containing questions addressing participants daily stressors, short and long term stressors, rate of weekly self-care activities, information about medical history, and prior knowledge of meditation training. From the responders to this survey, a random sample of 50 males and 50 females will be selected. Using a 2 x 2 factorial design, the participants will be assigned to one of four groups: high-stress lifestyles and meditation training, high-stress lifestyles and non-meditators, low-stress lifestyles and meditation training, and low-stress lifestyles and non-meditators. The two groups undergoing meditation training will meet with an instructor once weekly, for one year; non-meditators will continue with their normal daily routines. Blood testing (measuring NE) and EEG scans will be done on all four groups for comparison at 3 months, 6 months, 9 months, and 12 months.

Research on this topic is also being done on the SUNY Cobleskill campus. Dr. Corbett and Dr. Guerrant are currently working with participating students from the wellness classes. One group of students attend organized meditation sessions in the green house, one group meditates in a private location of their choice, and the final group does not meditate at all. Results will be compared, as well as measures of stress and anxiety.



## Expected Results

Represented in this graph is an abundance of benefits and expected results that may be produced from experience and practice in meditation training, and the acquired skills of self-thought and emotional regulation. This prediction also corresponds with previous research findings pertaining to the benefits of meditation training.

## Discussion

I expect to see significant decreases in thought production and daily anxiety, and increases in memory and attention functions in meditators, compared to non-meditators.

## Conclusions

Meditation training will reduce the overproduction and release of norepinephrine, reducing levels of daily anxiety and irrational stress, while also improving other abilities of cognitive functioning.