

# The Effect of Talking to Plants in Order to Improve Emotions and Reduce Stress in High School Students

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## ABSTRACT

This study was designed to see if students could improve their emotional state and/or reduce stress by talking to a plant. One of the major benefits of using plants to study feelings or stress is that implementation of the plant does not need to be standardized in order to measure mood or emotional feeling. Plants make excellent listeners because they do not talk back. They allow a person to express their feelings and emotions without interruption or reciprocal feedback. Volunteer high school students, 9<sup>th</sup> through 12<sup>th</sup> grade, were given a plant and asked to document their pre-discussion feelings, talk to the plant for 15 minutes about anything they wanted, then document their post-discussion feelings. The study was conducted for 4 weeks through self-guided surveys. The analysis showed a decrease in stress and nervousness across all grade-levels, with an increase in relaxation.

## Introduction

The American Psychological Association published an article that stated “Teens reported that their stress levels during the school year far exceeded what they believe to be healthy and topped adults’ average reported stress levels” (Bethune, 2014). In high school, students are expected to attend classes, complete assignments, study, earn good grades, and participate in extracurricular activities. Adults are encouraged to create a work/life balance in order to cope with stress, but stress reduction activities for teenagers is less clear.

According to the National Institute of Mental Health, psychotherapy, or talk therapy, is a technique that helps a client identify and change “troubling emotions, thoughts, and behaviors” (National Institute of Mental Health, 2021). Talk therapy requires a listener, a discussion, and counseling with a trained professional which can help to track and identify emotions and behaviors (National Institute of Mental Health, 2021). Additionally, affect labeling, or “putting feelings into words” can help identify patterns and assist with emotion regulation (Lieberman & Torre, 2018). So, is it possible to utilize talk therapy and affect labeling in your everyday life in order to recognize emotions and/or reduce stress? The answer may be as simple as talking to your plants.

An eight-week horticulture therapy study had clients garden while meeting with a trained therapist in order to achieve specific goals (Siu, Kam, & Mok, 2020). Siu, Kam, and Mok established that clients did not require the same pre-requisite condition to be included in the study, nor did they require the same implementation of plant species. The clients used self-completed questionnaires before and after their plant interactions, while the therapists met with clients for group therapy. The study used the ratings on the self-completed questionnaires to show that horticulture therapy did improve mental wellbeing but did not indicate significant changes in stress and anxiety (Siu, Kam, & Mok, 2020).

A different study examined how to better help workers in Japan combat fatigue, stress, anxiety, and improve overall well-being (Toyoda, Yokota, Barnes, & Kaneko, 2019). The study chose sixty-three electrical

company workers based on a preliminary questionnaire to serve as a control. The workers were given a plant to place on their desk. Upon feelings of stress, fatigue, or anxiety they were asked to take a 3-minute break and care for the plant. Workers pulse rates were measured over the course of the study, and they were given self-completed questionnaires to follow trends of decreased stress, anxiety, and fatigue. Toyoda et al. (2019), concluded that 58% of workers showed no significant change in pulse rate, however, 52% indicated on their questionnaires an improved sense of well-being and lower stress, and/or anxiety after caring for the plant (Toyoda, Yokota, Barnes, & Kaneko, 2019).

## Methodology

### Participant Selection

Sixteen participants (four from each grade-level) were selected at random from a volunteer pool. Participants were given a disclosure and release form indicating that this study was in no way used to treat or diagnose mental health issues, nor would any student be receiving therapy in any form (Appendix A). Participants were instructed to collect a binder with a serial number labeled per their grade-level, but to not indicate which serial number they had chosen. The serial number prevented us from identifying the participant and protected their anonymity during the collection of data.

### Plant Selection

Selection of plants for the study was based on ease of care and size. To accommodate participants, a variety of indoor plants were chosen with varying water and sunlight requirements. The type of plants selected was: *Sempervivum tectorum* (succulent), *Epipremnum pinnatum* (pothos), *Saintpaulia ionantha* (African violets), *Platycerium bifurcatum* (Staghorn ferns), and *Philodendron hederaceum* (philodendrons). Since the purpose of the research was to observe if students could recognize emotion and or reduce stress, the type of plant selected was not pertinent in data collection.

While the type of plant was deemed unimportant in design of study, it was important to ensure each participant could keep the plant alive for the duration of the study. Each participant received a potted plant, additional soil, plant food, and instructions for how to take care of their chosen plant. All materials were placed with each plant so that when participants selected their plant of choice, they could still maintain their anonymity. In addition, a blank name label was placed on the pot of each plant so the participant could create a name for their plant. Having participants name their plants could help them emotionally connect and feel more comfortable with talking to their “listening” plants.

### Plant Discussions

Each student was instructed to put their plant in a place that would be easy and convenient to care for. They were also encouraged to put the plant in a place that would offer the student privacy and the ability to speak freely. For example, one student chose a small cactus that would fit in their cup holder so that they could talk with their plant for 15 minutes during their commute home.

Students were instructed to be sure to circle or write down any feelings they were having before they spoke with the plant, especially if the term was not available on the survey. To preserve anonymity and privacy, the students were to never document what they spoke about with the plant. They were to simply select the term pre and post plant talk that best represented how they were feeling. They were asked to complete the surveys for a duration of four weeks.

## Survey Collection

Each binder contained an initial survey (Appendix B) which would serve as a control or baseline before implementation of the plants. The initial survey asked participants to designate their current age, grade-level, current courses, athletics, and extracurricular activities.

After collection of the initial survey, the participants were given a standardized survey (Appendix C) to complete and return each week, for the duration of four weeks. Each weekly survey contained the start date, “pre-talk” feeling selection, duration of plant talks and “post-talk” feeling selection. Each participant was asked to select given emotions that they felt before and after talking to the plant, but also given a place to write any other emotions or experiences they felt which may not have been listed. Each week the student would return seven days’ worth of data collection and pick-up new sheets to place in their binder for the next week.

## Results

Demographics was collected from participants based on academics and extracurricular activities. Our initial demographic survey showed that 6% of students were taking standard only courses, 38% were taking honors courses, while 56% were taking honors and advanced placement (AP) courses (Figure 1). Student surveys also indicated that 81% of students were participating in athletics (Figure 2) while 56% of students also participated in non-athletic extracurriculars (Figure 2).

Student pre-talk and post-talk responses were then categorized based on their grade-level. This means that responses were grouped and analyzed based on their grade-level due to similarities of academic courses, athletic participation, and extra-curricular activities. Data was collected by counting how many times a word was circled before or after talking to the plant for each participant over the 4-week trial. The words were then counted by how many times the word was circled by participants.

The initial student survey showed the following terms to be the highest ranked among participants (Figure 3): Freshman: tired, stressed, and anxious; Sophomores: tired and stressed; Juniors: tired and stressed; Seniors: tired, stressed, overwhelmed, and happy.

Analysis of the Freshman, Sophomore, Junior, and Senior pre and post plant talk surveys demonstrated that many terms showed no significant change in selection status. However, several emotions showed a significant difference in selection post plant talk and varied amongst the grade-levels.

Freshman: 85% less stressed, 70% less nervous, 64% less anxious, with 65% increase in relaxed (Figure 4).

Sophomores: 31% less stressed, 16% more nervous, 57% less angry, 23% more relaxed, with 25% more overwhelmed, and 29% more tired (Figure 5).

Juniors: 58% less stressed, 71% less nervous, 85% less overwhelmed, 23% less tired, with a 23% increase relaxed, and 27% increase in being happy (Figure 6).

Seniors: 38% less stressed, 40% less nervous, 61% less overwhelmed, 31% less anxious, 70% less angry, and 100% more appreciated, and 26% more relaxed (Figure 7).

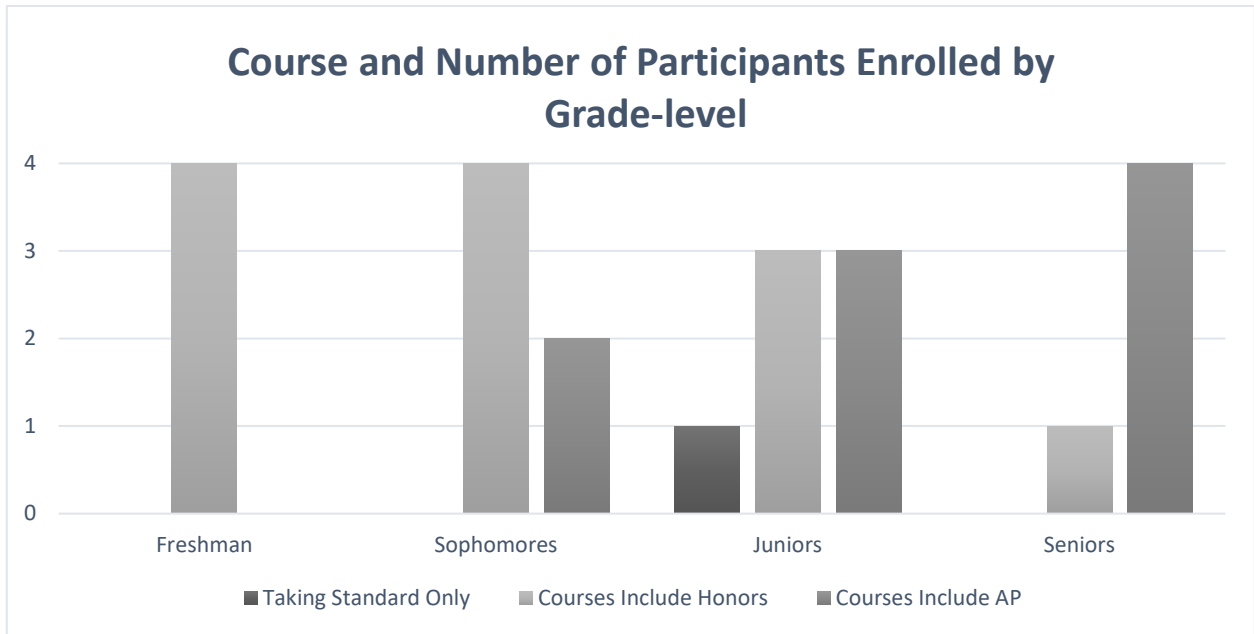


Figure 1

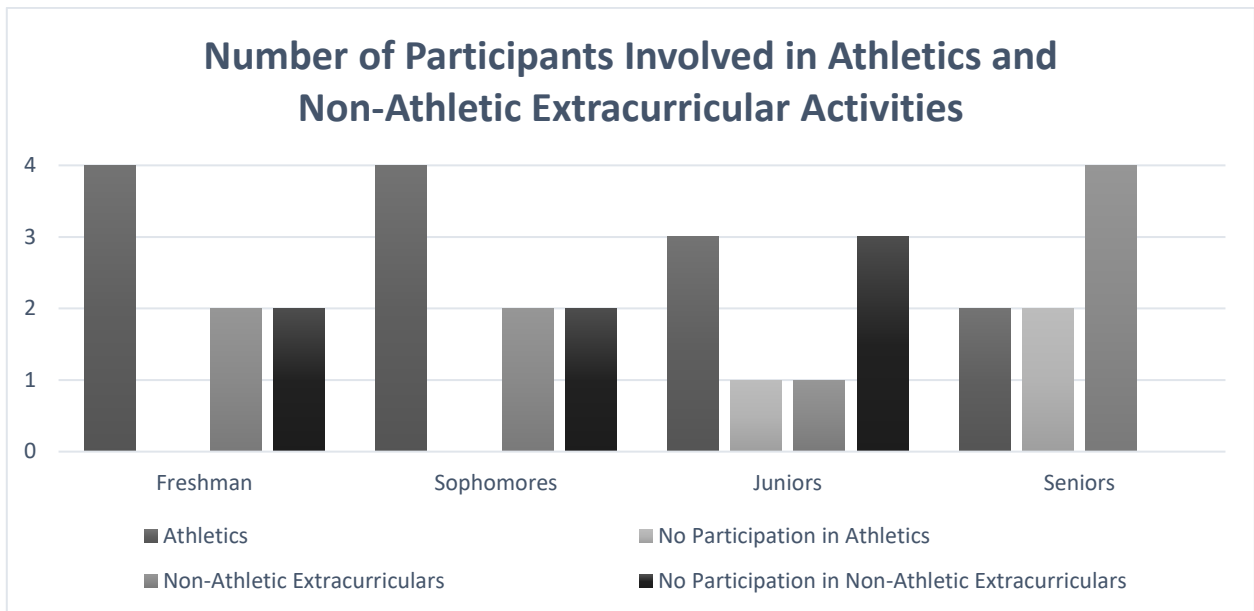


Figure 2

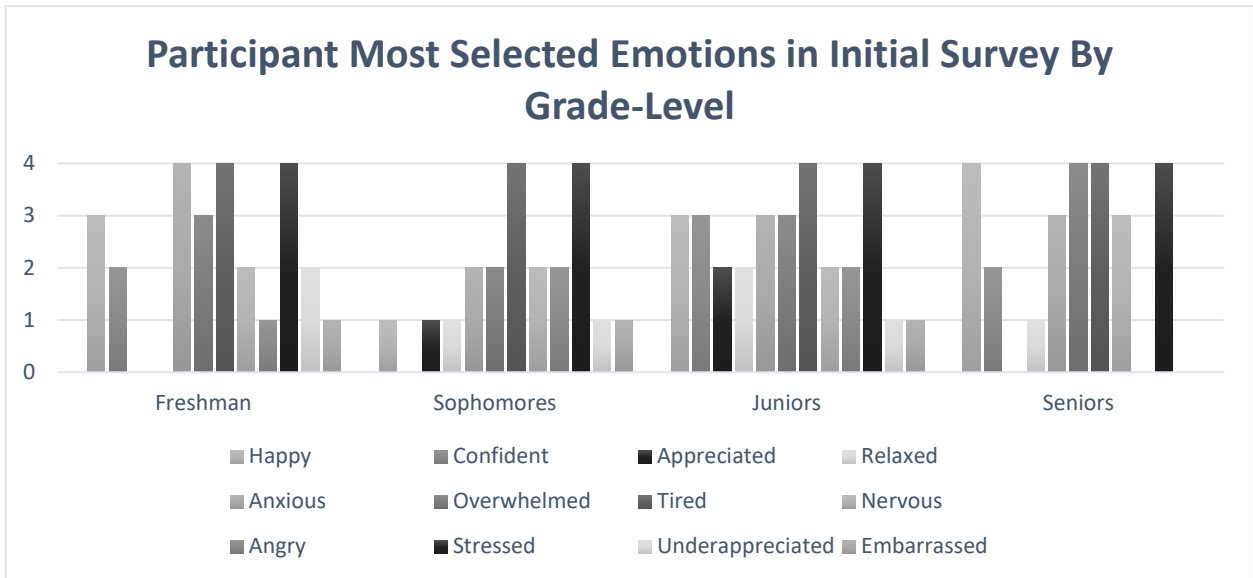


Figure 3

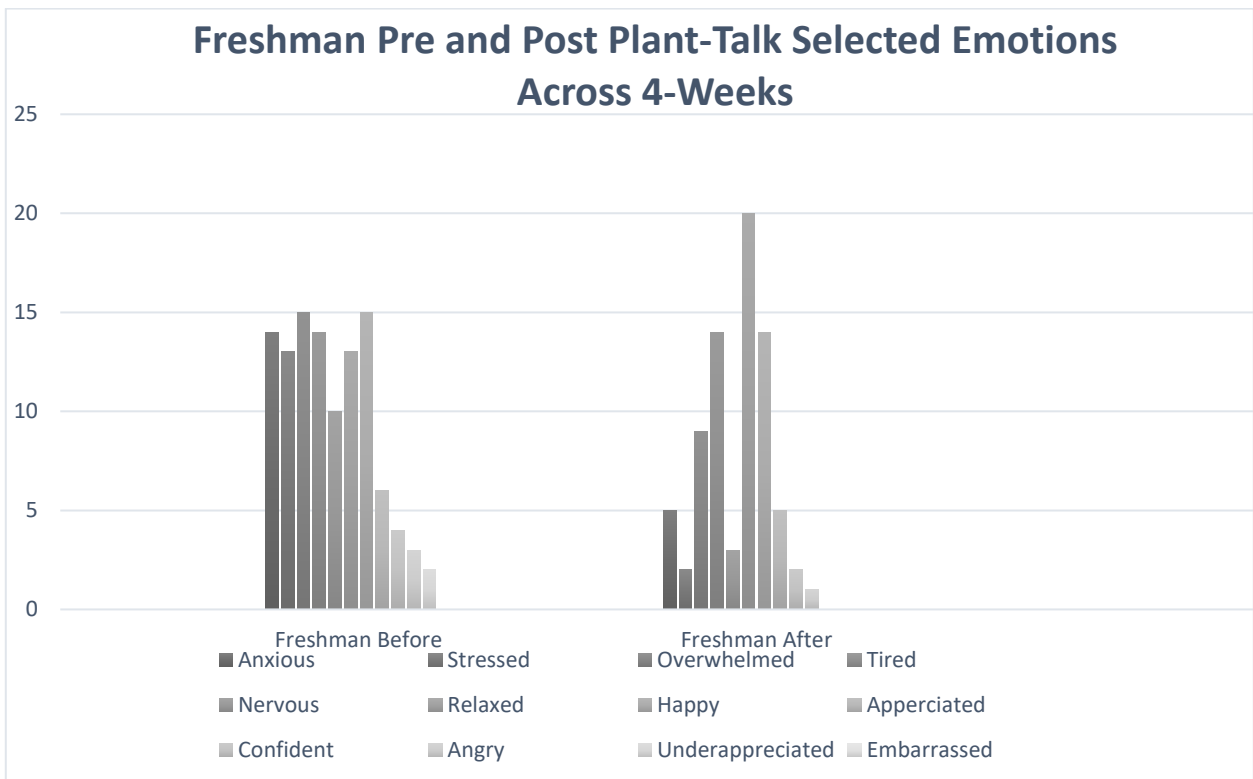


Figure 4

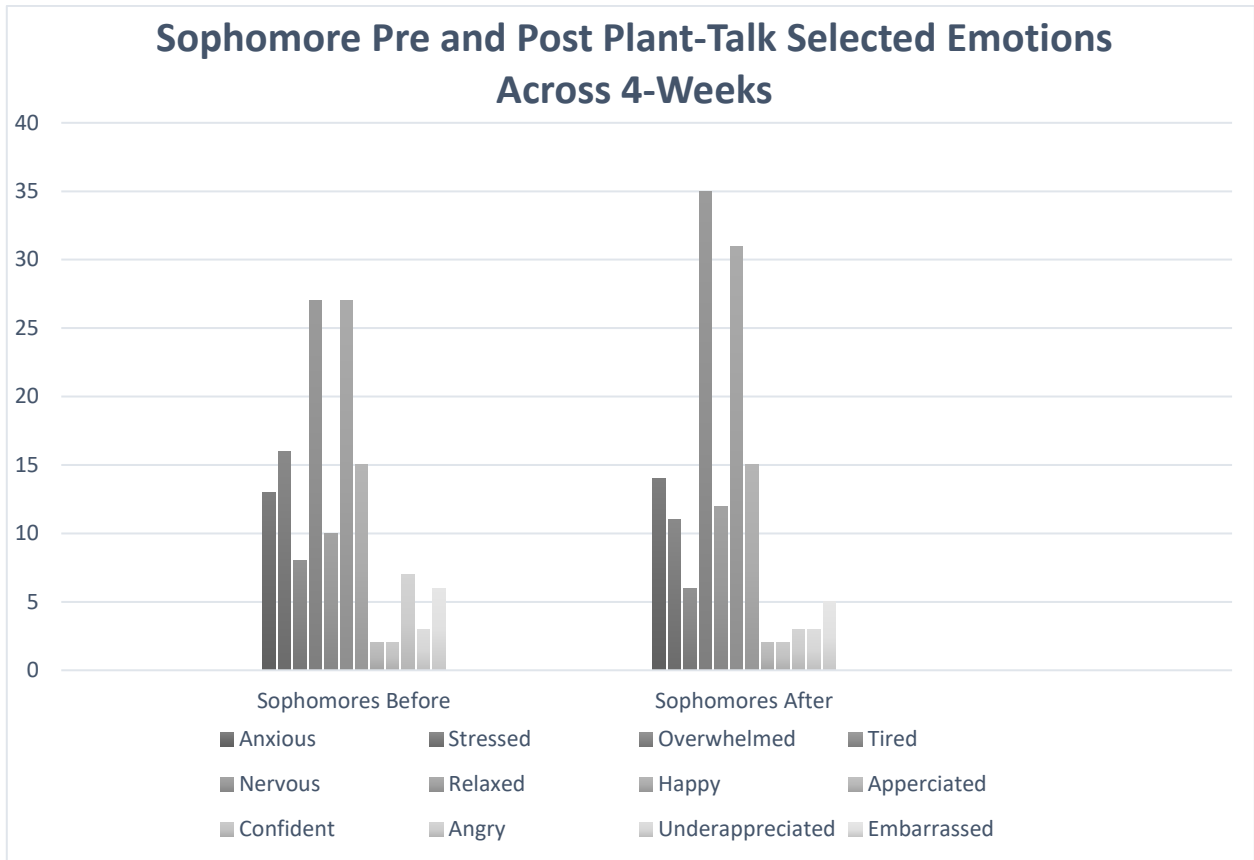


Figure 5

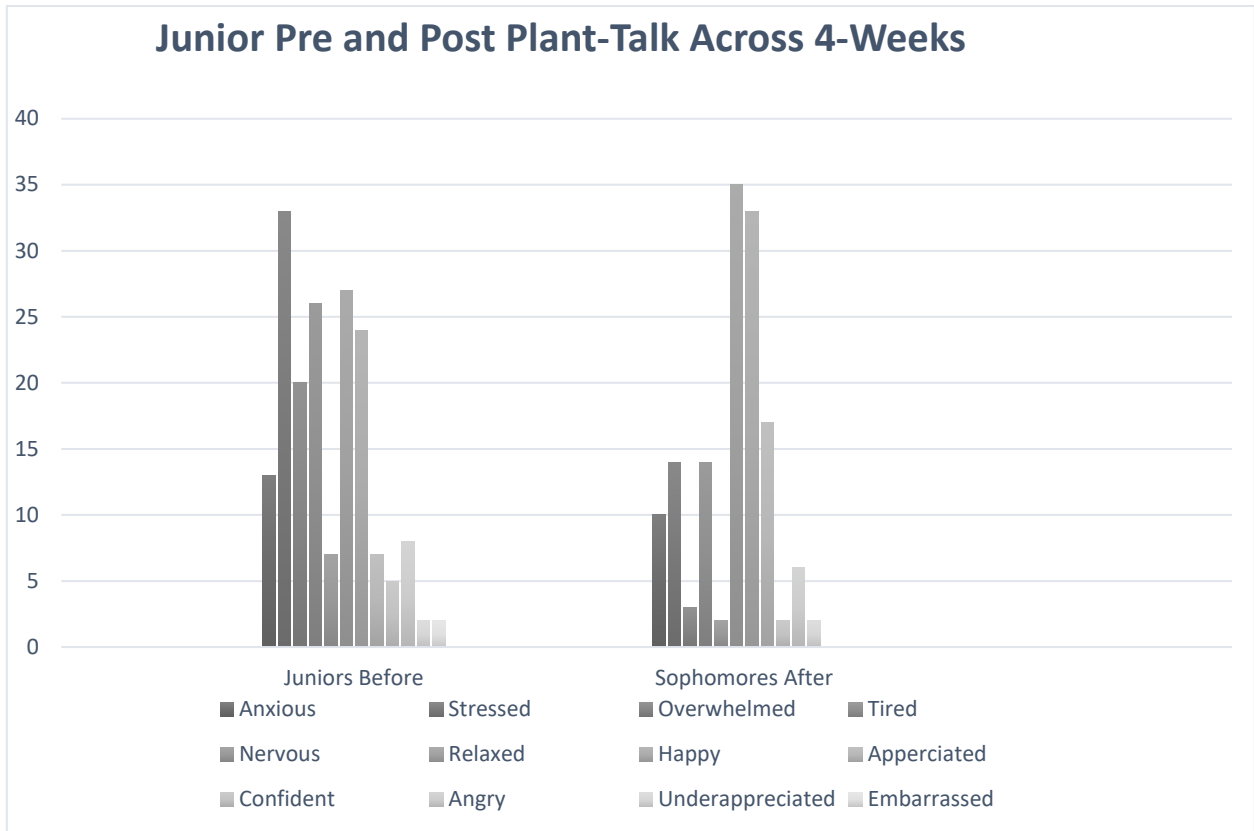


Figure 6

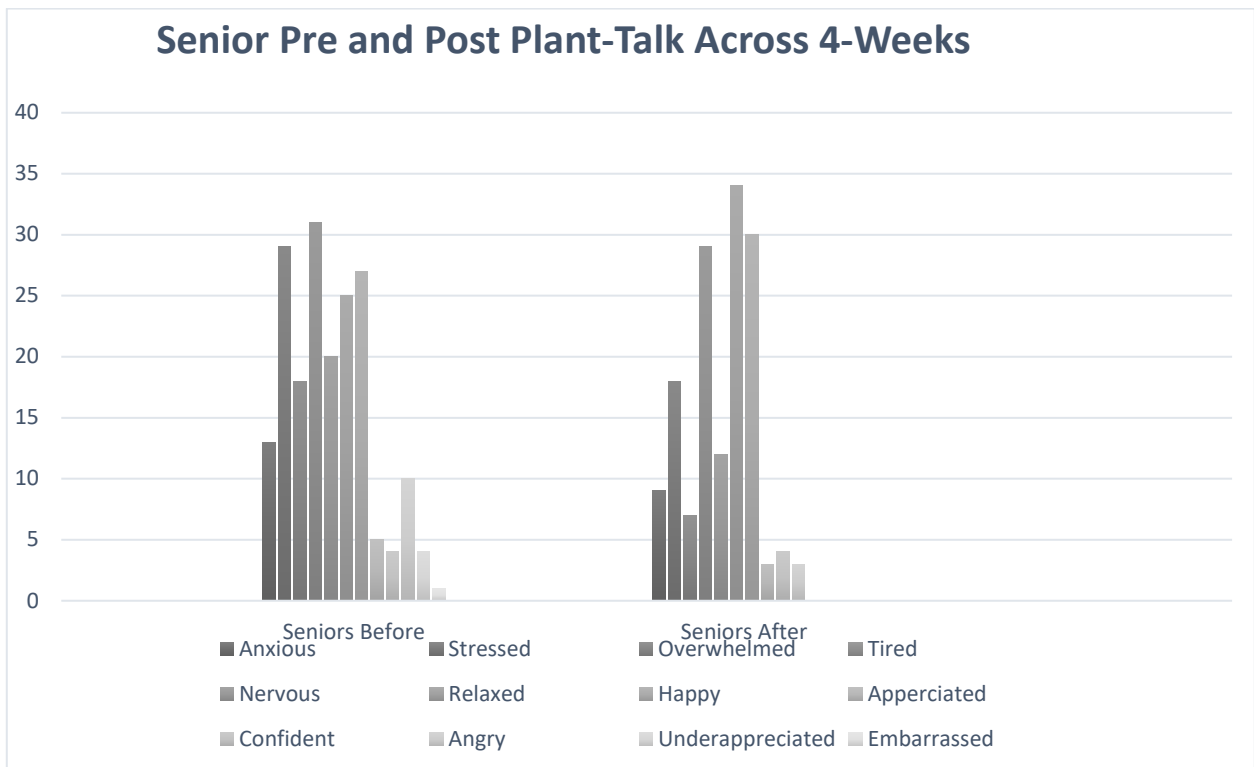


Figure 7

## Discussion

The purpose of the study was to observe whether or not high school students could create a version of talk therapy with the use of a plant in order to improve their emotional state and/or reduce stress. At conclusion of the study students verbally stated that they felt better after each plant discussion, with many saying that they planned to continue to talk to their plants each day.

As we analyzed the data, there was a noticeable decrease in stress and nervousness, with an increase in relaxation across all four grade levels. Junior and Seniors noted a decreased sense of being overwhelmed, while Sophomore responses noted an increased sense of being overwhelmed after several discussions. The Sophomores also noted an increase in tiredness after some of their discussions. While the other grade levels selected terms that had very little change, or noted significant decreases in negative feelings, the Sophomores were the only grade to experience increases that were not related to feeling better.

This led us to understand that while talking through an issue with a plant can lead to a decrease in stress and improve relaxation, it can also amplify negative feelings. Talking through issues or feelings can help lead to increased self-awareness. Becoming self-aware is a large part of a process in changing behaviors and regulating emotions (Sutton, 2016). It is possible that as Sophomore students were having their discussions, they were acknowledging the issue and therefore amplified how it made them feel.

Overall, the data from this study suggests that talking to a plant for 15 minutes can lead to an improved emotional state and a decrease in stress. The results were encouraging and highlights the ease at which a high school student could use a plant to talk through their feelings. Identifying easy and achievable ways to help teens reduce their stress and help them work through their emotions can help them adopt healthy emotional health as adults.

## Implications and Limitations

One of the biggest limitations to data analysis for this study would be the measurement of feelings. While the students were asked to acknowledge their feelings before and after, the students were not likely working through a singular issue, but many different ones. The students were simply tasked with taking what they were feeling at the time of the discussion and how they felt after.

We asked that the students not document or share what their conversations were about with the plant. This means that only emotions were tracked for a singular point in time, but we did not inquire about how a student might feel any time after they had documented their post discussion. Did their feelings come back? Did they decide to talk to their plant any time a particular feeling arose? These are questions that would need to be answered in a follow-up study.

In addition, despite being anonymous, the participants in this study were current high school students within the school the study was being conducted. This could have affected how honest some students were when circling emotions. While their answers were not being shared, nor were the students identified by their answers, they still make have felt they did not have complete anonymity which may have caused some bias in their answers. A recommendation would be to create a study that would include a larger sample of high school students from a school not associated with the researchers, and to examine how frequently the negative emotions return, or how long positive emotions are maintained.

## Acknowledgments

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