

# Exploring Effective Remedies for Academic Anxiety

Karin Edri<sup>1</sup> \*

<sup>1</sup>David Posnack Jewish Day School, Davie, FL, USA

\*Corresponding Author: edrikarin1@gmail.com

Advisor: Taly Furer, tfurer@posnackschool.org

Received August 14, 2025; Revised January 8, 2026; Accepted February 3, 2026

## Abstract

Academic anxiety is an extremely prevalent issue amongst students that results in a domino effect of negative consequences mentally, emotionally, and physically. Many students resort to drugs as an escape and damage their health, or bury themselves under such intense stress that it causes lasting mental and emotional trauma. This study explored effective remedies for academic anxiety among South Florida high school students. Four methods were tested: chewing gum, using fidget toys, listening to music, and smelling essential oils. A five-week experiment involving surveys and participant feedback was conducted to compare effectiveness. Results revealed that fidget toys had the most significant positive impact on alleviating anxiety, while essential oils proved least effective. Fidget toy use expanded beyond the researcher's study and increased within the researcher's high school by approximately 250% post-study. These findings suggested that simple, accessible tools may be effective in supporting students' mental well-being. Limitations included survey wording and restrictions on gum/music use in classrooms. This research contributed to identifying practical, non-pharmaceutical strategies for reducing academic stress.

*Keywords: Academic Anxiety, Fidget Toys, Music, Student Study*

## 1. Introduction

As a student who experienced significant anxiety, particularly academic anxiety, the researcher has directly observed its harmful effects on adolescents. This awareness motivated the pursuit of a simple, non-pharmacological approach to alleviating academic anxiety among high school students. The goal of this approach was to reduce the negative consequences associated with anxiety and to promote improved physical, emotional, and mental well-being. Due to this, four common and easily accessible practices have been carefully selected to research, aiming to determine which of these methods was most effective in alleviating anxiety and stress in high school students throughout South Florida.

### 1.1 Literature Review

According to Sandra Meier et al. from the National Library of Medicine, anxiety contributes to approximately five million deaths worldwide every year (Meier et al., 2016). Anxiety, also known as angst or worry, is an increasingly prevalent issue among high school students, introducing the concept of "academic anxiety." Chaman Lal Banga et al., assistant professor in the Department of Education, Himachal Pradesh University, defines it as the apprehension of rebuke from teachers, parents, and peers when students fail to perform academic responsibilities properly (Lal Banga et al., 2014). This fear of failure often traps students in cycles of stress, overthinking, and worry. Given its prevalence, numerous remedies have been explored beyond prescribed medication.

### Repercussions: Drugs

Many teenagers turn to drugs as a quick fix for anxiety, leading to broader health concerns. Sarah Connolly,

epidemiologist at Emory University, found the most commonly reported motivations for substance use were “to feel mellow, calm, or relaxed” (73%), “to stop worrying about a problem or to forget bad memories” (44%), and “to help with depression or anxiety” (40%) (“Stress Main Factor...,” 2014). As anxiety rises among teens, so does substance use, underscoring the urgency of identifying safe and effective remedies.

#### Remedies: Gum

The first method examined was chewing gum. Research suggests it can reduce stress while improving focus. Andrew P. Smith of Cardiff University found that chewing decreased muscular tension associated with psychological stress by 10% (Smith, 2016). Students also report benefits. Junior Katherine Bilac explained, “It helps me stay awake during long lectures instead of going on my iPad” (Robison, n.d.). Both evidence and personal testimony highlight gum as a simple yet effective tool for reducing stress and maintaining focus.

#### Remedies: Fidget Toys

Fidget toys were also looked at. Although originally researched for autistic and younger children, they can benefit older students as well. Redmond et al. at Kingston University found parents of autistic children perceived fidget toys to be beneficial in reducing anxiety (Redmond et al., 2023). Among college students, Donald Slater of Georgia Southern University reported that use of fidget toys correlated with decreased distraction and increased acceptance over time (Slater, 2008). These findings suggest fidget toys can help students of all ages manage stress.

#### Remedies: Music

Music, often used habitually, can also work to alleviate anxiety. Adiel Mallik and Frank Russo of Ryerson University note that music increases dopamine and opioids while lowering cortisol (Mallik & Russo, 2022). Its effects vary depending on how the listener engages with it. Eckart Altenmüller, professor at the University of Freiburg, explains that those focusing on lyrics activate different brain regions than those attending to melodies (Altenmüller, 2004). Thus, music’s impact depends both on neurochemical changes and individual listening styles, offering a versatile method for stress relief.

#### Remedies: Scents

Finally, the effects of scents were tested, particularly essential oils. Aromatic compounds like lavender, peppermint, and eucalyptus are known for calming properties and influence the limbic system, which regulates emotion. Lavender helps the body manage stress and is linked to improved sleep and reduced anxiety (Karra, 2012). Peppermint promotes muscle relaxation and has long been used for gastrointestinal and nervous system support (Chumpitazi et al., 2018). Eucalyptus is invigorating and helps reduce sleepiness (Karra, 2012). Collectively, these scents offer natural ways to lower stress, reduce cortisol, and encourage relaxation.

#### Research Gap

Collectively, existing research demonstrates that non-pharmacological interventions such as chewing gum, fidget toys, music, and scents can reduce stress and anxiety by improving focus, lowering physiological stress responses, and promoting emotional regulation. Studies on chewing gum consistently report reductions in tension and increased alertness; research on music highlights neurochemical mechanisms that decrease cortisol; and aromatherapy studies show measurable calming and energizing effects through the limbic system. Similarly, fidget toys have been shown to reduce anxiety and improve attention, particularly among autistic children and college students.

However, despite this growing body of evidence, several critical gaps remain. First, most studies examine these interventions in isolation rather than comparing their relative effectiveness, leading to the question of which method of the four works best. As a result, it remains unclear which non-pharmacological strategy is most effective in alleviating academic anxiety. Second, there is a notable lack of research focusing specifically on high school students, especially regarding the use of fidget toys, which are largely studied in younger children or college populations. Finally, there is limited research examining these interventions within a real-world academic setting and within a specific demographic context, such as high school students in South Florida.

To address these gaps, the present study compares the effectiveness of chewing gum, fidget toys, music, and scents in reducing academic anxiety among high school students in South Florida. By directly evaluating and contrasting these commonly used strategies, this study aims to identify which method is most effective and to extend existing research to an understudied population.

### Hypothesis

Music was hypothesized to be the most effective method to alleviate anxiety, while fidget toys would be the least: Research shows music is widely used by students, who report it helps with concentration and relaxation, so the researcher hypothesizes it will significantly reduce anxiety. In contrast, fidget toys seem least effective due to limited research on their link to students' stress levels and their lack of acceptance as a social norm among high school students.

## **2. Methods**

To test the hypothesis, the study was conducted in four phases. The first phase was to gather participants: the researcher did so by advertising help for the study to friends and staff in schools across South Florida and at the researcher's high school. From the students who offered to participate, they were asked whether they would commit to a five-week study; followed by questions relating to allergies, medication, and few restrictions. This process then narrowed the group to 86 participants. Ages ranged from 13 to 18, with 35.8% male and 64.2% female.

In phase two, a pre-study survey was sent out, gathering general data about anxiety and participants for phase three.

Phase three consisted of a five-week study conducted with South Florida high school students to evaluate the effectiveness of four different anxiety-relief methods. Each week, a distinct method was assigned to a group of participants who were asked to practice the technique throughout the week when anxious. The four methods were chewing gum, using fidget toys, listening to music, and smelling essential oils. At the end of each week, participants completed a survey that assessed their anxiety levels and provided feedback on whether the assigned method had a positive impact on their anxiety or not. Participants were split into separate groups so all the methods would be tried on different weeks, therefore preventing an academic bias if one week was less stressful than the other. The thematic analysis of the survey responses aimed to identify trends in the participants' experiences and determine which method was the most effective in reducing anxiety. This process allowed for a comprehensive comparison of the different methods and offered valuable insights into their impacts on anxiety.

As the experiment time frame concluded, phase four began, where a follow up survey was sent out asking if the participants had adapted and implemented any of these methods as a strategy to calm them down post-study. All surveys were originated by the researcher and consisted of questions developed by the researcher. When rating their feelings, participants selected one of eight options on a 0–7 numeric anxiety scale (least to most anxious). A score of 0 indicated “it did not change anything, I feel the same,” while 1 represented “not anxious at all, it helped a lot.” Midpoint scores reflected moderate effects (e.g., 4: “it helped me a bit, but not enough”), and 7 indicated “made me super anxious/did not help at all.” By combining this follow-up with the previously gathered and analyzed data, the most effective method for alleviating anxiety among South Florida high school students stood out amongst the others.

### 2.1 Pre-Study Survey

In the initial research, a survey was sent out to the widespread population of Florida in order to collect information on academic anxiety and anxiety as a whole.

Additionally, a few questions were included to determine which method people thought would work the best out of chewing gum, using fidget toys, listening to music, and smelling various scents. Furthermore, certain questions were asked, inquiring about specific anxiety disorders and medical concerns to gather information needed to recruit participants for the study.

Once results were gathered from the survey, the researcher wound up with 86 participants. As the participant list was finalized, an email-chain system was created which tracked each member and what forms they filled out, as well

as sent information for each upcoming week/method.

## 2.2 Week 1: Gum

For the first week of the study, the method the researcher tested was chewing gum. As participants were broken up into two separate groups of about 40 people, an email was sent out to the first group informing them of the study, and had them chew gum throughout the week when they felt anxious. At the end of week one, a survey was sent out that tracked participants' progress as well as for them to report their results to. In the survey, questions were included such as shown in the image below:

## 2.3 Week 2: Fidget Toys

Fidget toys were the method tested for the second week of the experiment. As the first week concluded, the researcher distributed fidget toys and reminded each participant to collect one. There were a variety of diverse sensory toys handed out to participants such as squish balls, popping fidget toys, and textured stickers, and instructed them to use as necessary when stressed. The second survey sent out included a similar question base, but slightly altered to fit week two:

- How anxious did you feel at the end of the gum week (week 1)?
  - Anxiety was rated on a scale of one to seven, one being 'not anxious at all,' four being 'still kind of anxious,' and seven being 'super anxious.' An additional answer choice was added stating that 'it did not change anything, I feel the same.'
- Did you chew gum at all this week?
- Did you chew the gum this week because you were anxious or because it is just a force of habit?
- How often did you chew gum this week?
- Do you feel like chewing gum helped at all by lowering your stress levels?

Question Set 1.

- How anxious did you feel after the fidget toy week (week 2)?
- Did you use the fidget toy at all this week?
- How often did you use the fidget toy this week?
- Did you break the fidget toy at some point throughout the week?
  - Many participants reported breaking their fidget toys from constant use, which indicated high stress levels. As a result, I decided to add the question above to the survey to assess how frequently participants used their fidget toys.
- Did you use the fidget toy because you were anxious or because it is just a force of habit?
- Do you feel as if using the fidget toy helped at all by lowering your stress levels?

Question Set 2.

- How anxious did you feel after listening to your music this week (week 3)?
- Did you listen to music at all this week?
- How often did you listen to music this week when you were anxious?
- Which genre of music were you most likely to resort to when anxious?
- Did you listen to music this week because you were anxious or because it is just a force of habit?
- Did listening to music (during times of anxiety) decrease your stress levels at all?

Question Set 3.

- Which essential oil scent did you receive?
- How anxious did you feel after you used the essential oil this week (week 4)?
- Did you use the essential oils at all this week? (If you did not like the smell and therefore did not use the oil, press NO)
- How often did you smell the essential oil this week?
- Did the essential oils decrease your stress levels at all?

Question Set 4.

## 2.4 Week 3: Music

Music was the next method tested for the study, instructing participants to listen to it when they were anxious. Towards the end of week three, a survey was emailed (similar to the past few) to members of the experiment, but with questions that were more relevant to the music week.

## 2.5 Week 4: Essential Oils

For the final week, essential oils were tested as a method of relaxation. An email was sent out prior to the fourth week assigning each participant a certain scent and telling them to smell it during moments of anxiety. Three scents were picked and distributed evenly among the experiment members: lavender, eucalyptus, and peppermint. As the final week came to an end, the researcher delivered a survey to the participants summarizing their week with the essential oils.

## 2.6 Post-Study Surveys

A few weeks after the experiment, a follow-up survey was sent out to record any of the participants’ final thoughts about the methods they tested and to see which method actually worked the best to remedy academic anxiety. Once the survey was filled out by all members of the experiment and the method with the highest success rate stood out amongst the rest, an additional survey was sent out to students who did not partake in the study. This additional survey for non-study members was to find out how or if the researcher’s study had an impact outside of the borders of merely the study’s participants.

### *People who participated in the study:*

- After completing my study, do you currently use any of the following methods to help reduce stress?
  - (The following methods being chewing gum, using fidget toys, listening to music, and smelling essential oils)
- Click the choice that best represents how the study impacted you:  
Choices:
  - I started to chew gum after the study
  - I chewed gum more often after the study
  - I started to use fidget toys after the study
  - My use in fidget toys increased after the study
  - I started to listen to music more after the study
  - I listen to music more after the study
  - I started to use essential oils after the study
  - My use in essential oils increased after the study
  - None of the above
- Now that you have tested each of the anxiety relief methods, which one do you believe worked the best to remedy anxious feelings?

Question Set 5.

### *People who did not participate in the study:*

- Did you see your peers/friends with fidget toys in school recently?
- If you saw your peers with a fidget toy, did it convince you to buy one too?
- Does the fidget toy help with your anxiety?

Question Set 6.

## 3. Results and Discussions

Figures from Week 1 (the gum week) are included to illustrate the experimental format and the responses obtained, with corresponding results and discussion provided for each figure in accordance with the format used throughout the study. Weeks 2, 3, and 4 followed the same general structure with minor variations; however, their results are presented without figures, which were included only when necessary or when clarification was required.

### 3.1 Pre-Study Survey

The findings in the pre-study/general survey indicate that almost 98% of students experience anxiety both due to their studies and while at school. In the general survey the researcher asked which of the following methods people thought would work best for them before they were implemented into daily use. The results show that 60% of people believed music would relax them the most, a significant portion of 21% of respondents did not feel any of the listed methods would work for them, and less than 20% of respondents combined believed fidget toys, essential oils, or chewing gum would alleviate anxiety best.

### 3.2 Week 1: Gum

How anxious did you feel at the end of the gum week (week 1)?  
86 responses

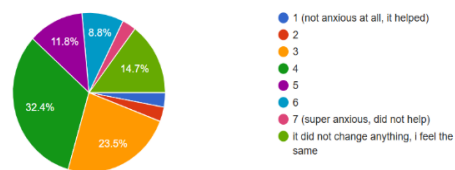
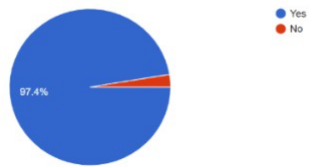


Figure 1. According to the graph from this response, Figure 1 demonstrates extremely diverse results, ranging from zero to seven, signifying that there was not a huge impact in feeling less stressed when chewing gum.

Did you chew the gum at all this week?

86 responses



Did you chew the gum this week because you were anxious or because it is just a force of habit?

86 responses

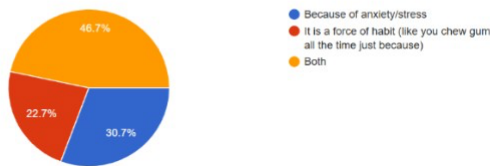


Figure 2. As a result of both of the above questions from Figure 2, 97.4% of participants chewed gum this week. However, contrary to the belief of chewing gum habitually, 30.7% reported chewing gum exclusively when stressed rather than out of habit, expressing gum’s very slight ability to partially help relaxation levels.

was reported during the fidget toy week with 98.6% of participants selecting ‘yes’.

How often did you use the fidget toy this week?

About 88% of the participants used fidget toys constantly throughout the week, elucidating the great impact that the fidget toys had on the participants, which later spread to the rest of the surrounding community. During the other weeks, participants used the various methods-gum and music-out of routine rather than in response to stress (essential oils were not used out of habit, they were used when anxious, but did not show signs of tranquility even at the slightest). This habitual use does not lead to changes in feelings of relaxation, as the methods are simply part of their normal day-to-day activities.

How often did you chew gum this week?

86 responses

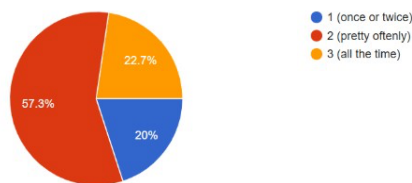


Figure 3. The results of the graph in Figure 3 display that 80% of people chew gum at least somewhat often. However, according to Figure 2, it is evident that people chew gum often due to habit, not stress. Since chewing gum is a subconscious activity to approximately 70% of people (as referred to in Figure 2), they do not notice a change in their behavior when chewing it, as this activity is already engraved in their daily use. Thus, the gum method was not as successful as predicted.

Did you break the fidget toy this week?

Throughout the duration of the week, the researcher noticed the number of people who would approach due to a broken fidget toy gradually increased. As a result of this, a question was added to the survey to express the constant

3.3. Week 2: Fidget Toys

How anxious did you feel after the fidget toy week (week 2)?

Similarly to the results from the previous week, the fidget toys do have slightly scattered results. However, the largest percentages fell on the lower end of the scale, with participants reporting feeling barely anxious (choices 1-4 out of 8). Specifically, 8.1% chose 1, 23.6% chose 2, 27.8% chose 3, and 27.8% chose 4; with the left over 12.7% scattered amongst choices 5-8 and 0 (unchanged). This suggests that the use of fidget toys is associated with lower levels of anxiety. Fidget toys, although not used regularly by South Florida high school students, are becoming a part of the social-norm at school due to the researcher’s study, leading to increased use in fidget toys throughout the community.

Did you use the fidget toy at all this week?

Despite fidget toys being the most neglected method prior to the study, the highest-use percentage

Do you feel like chewing gum helped at all by lowering your stress levels?

86 responses

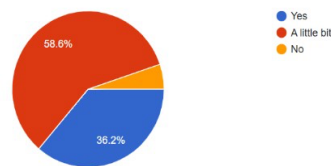


Figure 4. The most selected choice according to Figure 4 was the ‘a little bit,’ expressing that people are not too confident that gum aided in lowering anxious feelings, displaying that gum does not have a significant positive correlation with anxiety. These findings support prior research by Smith (2016) showing slight reduced stress through chewing gum.

usage of the fidget toys. More than half of the participants (54.9%) report breaking their fidgets throughout the week. By adding this question to the survey, the researcher ensures that the majority of people who report using the fidget toy ‘once or twice’ broke it, and do not have an extra. This question also signifies that fidget toys were being used constantly: when an individual uses a fidget toy enough, it can wear the material down and break it. So due to the fact that over half of the participants report breaking their fidget toys, sheds light upon just how much the fidget toys were used.

*Did you use the fidget toy because you were anxious or because it is just a force of habit?*

The fidget toy week surpasses all the other weeks with the highest percentage of people who reported using ‘only when stressed’ rather than the other weeks’ responses indicating habit. In this case, about 91% of participants state that they use their fidgets when anxious, indicating a strong positive correlation between fidgets and anxiety.

*Do you feel as if using the fidget toy helped at all by lowering your stress levels?*

In addition to the previous question, this week also shows the largest percentage of ‘yes’ answers, rather than the ‘a little bit’ answer like the rest of the weeks. Results from the weekly form shed light upon the drastic difference that fidget toys have caused South Florida high school teenagers: 62% of people confidently feel that the fidget toys helped them positively and increased feelings of relaxation, hence the selections of ‘yes.’ This week’s results extend Redmond et al. (2023) by demonstrating that similarly to their university study, fidget toys are also able to benefit high school students increasingly.

### 3.4 Week 3: Music

*How anxious did you feel after listening to your music this week?*

On an identical scale of 0-7, most responses ranged from 1-4, signifying low rates of anxiety resulting from this week, showing a positive correlation between music and anxiety. Specifically, 20.8% chose 1, 22.2% chose 2, 18.1% chose 3, and 20.8% chose 4; with the left over 18.1% scattered amongst choices 5-8 and 0 (unchanged).

*Did you listen to music at all this week? How often did you listen to music when you were anxious?*

During the third week, 95.8% of participants report listening to music this week. However, most of these responses were linked to a force of habit. Additionally, results show that 81.1% of participants reported listening to music constantly.

*Which genre of music were you most likely to resort to when anxious?*

The three main genres of music that people would resort to are pop (34.8%), rap (14.5%), and house music (15.9%), with an additional 1-2% for each other genre inputted (e.g. folk music, heavy metal, country, jazz, indie, etc.).

*Did you listen to music this week because you were anxious or because it is just a force of habit? Did listening to music (when you felt stressed) decrease stress levels at all?*

Results from the second question (listening to music in correlation with anxiety levels) demonstrate a similar pattern to the fidget toy week, where the percentage of confident ‘yes’ answers is a vast majority of participants (72.2% confidently report yes). In addition, none of the participants answered ‘no.’ This displays that similarly to the fidget toys, music did help temporarily distract participants from their issues. However, referring back to the reason for music usage, the small 10.1% selecting ‘because of anxiety,’ shows that music was listened to more as a habitual act rather than out of sheer stress, thus displaying no direct impact of music on anxiety.

### 3.5 Week 4: Essential Oils

*What scent did you receive?*

Noticeably, the researcher distributed the scents almost completely evenly amongst members in the study. They

received lavender (34.3%), eucalyptus (34.3%), and peppermint (31.4%). This question was asked on the survey in an attempt to spot possible patterns in specific scents and their correlation to relaxation. However, results display that all scents had little effect on the alleviation of anxiety.

How anxious did you feel after you used the essential oil this week?

Results vary extremely on the impact of essential oils on anxiety of South Florida high school students. However, a significant percent of the answers are in the higher range of the scale (most responded in the 3-7 range), indicating that essential oils overall do not have an impact on stress and are the most ineffective method of the four for remedying anxious feelings. Specifically, 20.6% chose 3, 35.3% chose 4, 8.8% chose 5, 8.8% chose 6, 8.8% chose 7, and 8.8% chose 0 (unchanged). The remaining 9% split amongst choices 1 and 2.

Did you use the essential oils at all this week? (if you did not like the smell and therefore did not use the oil, press NO).

Around 15% of people did not like the smell of their essential oil, causing week four to have a substantially lower usage rate in comparison to the rest of the methods. Additionally, the researcher received many verbal reports throughout the fourth week of participation, stating that participants did not like the scent they were given, leading to the asking of the question above. A deeper dive into the responses in an attempt to spot a pattern finds that the most disliked scent is eucalyptus.

How often did you use the essential oil this week?

Similarly to questions one, two, and three this week, essential oils had the lowest usage of all four methods: The ‘all the time’ choice was selected by about 3% of the respondents, while the ‘once or twice/almost never’ option was chosen by 35%. This sheds light upon the failure of essential oils acting as a method to relieve anxiety.

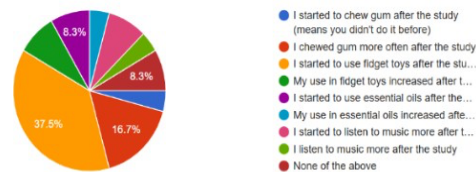
Did the essential oils decrease your stress levels at all?

Overall, responses show that, once again, essential oils did not prove to work when attempted to alleviate anxiety in South Florida high school students. Only 19% of participants were confidently able to select ‘yes.’

As mentioned previously, participants were initially split into two separate groups, and the second group would merely be delayed a week on method testing to avoid a possible bias of academic uneasiness throughout the weeks. For instance, if week one felt less stressful than week three, participants may not get the chance to implement the first method as much, so the researcher delayed half of the participants in order to gather balanced results and a more even implementation of methods throughout the duration of the five weeks.

Click the choice that **best represents** how the study impacted you.

86 responses



Now that you have tested each of the anxiety relief methods, which one **worked the best** to remedy anxious feelings?

86 responses

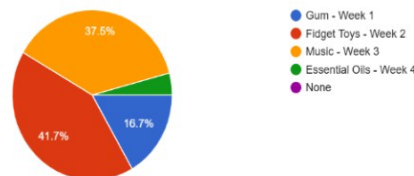


Figure 5. The most selected choices in both questions in Figure 5 indicate that, overall, fidget toys surpassed all other methods in voted and evident success rate. Referring back to the first question in this figure, out of the many choices given, 37.5% selected that they started using fidget toys *after* the study. This proves that fidget toys were not part of a “social-norm” prior to the study since people did not use them. Not only so, but this research introduced a brand new concept to the high schoolers which stuck with them and evidently had a long term impact on their relaxation in terms of anxiety. Furthermore, the participants are asked a final question to ultimately reveal which method of the four worked the best, and again, ‘fidget toys’ is the most selected option, showcasing its success.

### 3.6 Post-Study Surveys

#### People who participated in the study:

After completing my study, do you currently use any of the following methods to help reduce stress? In the follow-up survey (sent about a month after the study concluded), 70.8% of participants responded that due to the study, they are currently implementing at least one of the four methods in their day-to-day use. This shows that the study has a long term effect on the vast majority of participants.

#### Outcome / most successful method and why:

Although both fidget toys and music had the highest usage, participants voted that they listen to music due to habit and not to stress, signifying that music has no direct correlation to anxiety. However, for fidget toys, over 90% of the participants who voted using fidgets claim it is at times of anxiety and not out of habit, indicating a direct correlation between fidget toy use and anxiety. Thus making fidget toys the most successful method of the four and outperforming music. Unlike the previously mentioned studies, which examined these strategies independently, this study directly compares their effectiveness, resulting in fidget toys as the ultimate best method.

#### People who did not participate in the study:

Did you see your peers/friends with fidget toys in school recently? After responses were received from the survey of people who partook in the experiment, the researcher found that fidget toys were by far the most effective method to alleviate anxiety in South Florida high school students. Following that survey, the researcher sent out this poll to people who did *not* participate in the study to see if the research had any outreach or effect on anyone in the surrounding community. This survey had 111 respondents, whom 100% saw at least one of their peers with a fidget toy.

If you saw your peers with a fidget toy, did it convince you to buy one too? (if you did not see anyone with a fidget toy, select that option). Although not all people were convinced to buy a fidget toy, 63.6% of people were. In addition, 0% of participants reported seeing no one with fidgets, meaning that the study had an impact on 100% of public visibility as well.

Does the fidget toy help with your (academic) anxiety? To conclude the survey, participants outside of the study were asked whether or not the fidget toys help with anxiety. The choices for this question are: yes, no, I did not buy one. Not everyone bought a fidget toy, but out of those who did, 100% of them express that it helps with their anxiety. Nobody selected 'no,' meaning that fidget toys *are* able to help 100% of individuals who use them.

## 4. Limitations

As far as limitations to the research, there were not any major ones that the researcher was unable to overcome. However, a minor limitation to the research was that the students have free will and can choose to use or not use each method exclusively as assigned per week. For instance, many kids chew gum or listen to music as a force of habit (proven by the survey responses), meaning that during method testing weeks that include using fidget toys exclusively or smelling essential oils exclusively, students may subconsciously listen to music or chew gum throughout that week as well. However, this does not alter results: Habitual methods may help with anxiety, but when implemented with new, non-habitual methods such as fidget toys, a significant change is shown (if the method is successful) because the participant is using a new method for the first time, ultimately 'breaking' their daily routine and implementing something new.

Furthermore, a more important limitation was the slight ambiguous wording of certain questions. A few questions on the survey could have been made more specific or been rephrased so people could understand them better. Making the questions a little too broad was a marginal limitation but a limitation nonetheless, since participants had a slightly harder time understanding the exact point attempted to convey in the survey.

Finally, an additional limitation was teachers' permissions on letting students chew gum in class and listening to music. Some teachers did not let students use headphones in class or chew gum since it may be distracting. However, all this did was merely confine participants to certain parts of the day that they could not use their methods. Although

these limitations may have inhibited expansion for the research, they did not alter the results, each for their own separate reasons.

## 5. Conclusion

This research confirms the effectiveness of fidget toys on the academic anxiety of South Florida high school students, as it signifies the method which had the largest success rate of the four, being the fidget toy method. Gaps such as no research on the best method on anxiety alleviation or any research availability on fidget toys in high school settings stimulated the research. In opposition to the hypothesis, which stated that fidget toys would be the least impactful and music would display the most significant change, fidget toys ended up having the most positive correlation with lowering stress levels in South Florida high school students (due to their association of being used when anxious rather than out of habit).

Furthermore, with results from the pre-study survey, the five week experiment, and the post-study follow-up survey, data was able to be curated about the most effective method that stood out amongst the rest in success rate, which again, was the fidget toy method. Limitations such as time frames and constraints as well as the free will and choice of students did not give the research an opportunity to expand, yet did not alter results. Therefore, this research can be a stepping stone for future investigation towards the overall goal of diminishing anxious feelings.

## 6. Future Findings

These findings can be implemented in other areas as a base to further expand upon the idea of soothing stressful feelings. For instance, teachers in school can give their students fidget toys to use in class throughout the year and see how the students perform, as well as the additional impacts that may be caused due to this such as: Increased sleep due to focus in class, significant shift in grades, or merely overall happiness. Despite being tested on high school students, these findings can be implemented in other age groups as well such as middle schoolers, lower schoolers, and even adults, especially during times not related to education.

Additionally, one can use this research to create a more in depth analysis of the science behind the use of fidget toys, and use any other methods that may have similar scientific background to aid in generally stressful environments. Finally, companies can take this research and use its results to create and develop a fidget toy that may be suitable for everyone and that will not be distracting to people in the surroundings.

## References

- Altenmüller, E. O. (2004). Music In Your Head. *Scientific American Mind*, 14(1), 24–31. <http://www.jstor.org/stable/24939362>
- Chumpitazi, B. P., Kearns, G. L., & Shulman, R. J. (2018). Review article: the physiological effects and safety of peppermint oil and its efficacy in irritable bowel syndrome and other functional disorders. *Alimentary Pharmacology & Therapeutics*, 47(6), 738–752. <https://doi.org/10.1111/apt.14519>
- Karra, E. (2012). Aromatherapy and its favourite essential oils. *Dspace.cuni.cz*. <https://dspace.cuni.cz/handle/20.500.11956/42271>
- Lal Banga, C., Chaman, & Banga, L. (2014). Academic Anxiety among high school Students in Relation to Gender and Type of Family Academic Anxiety among high school Students in Relation to Gender and Type of Family. <https://www.shodh.net/phocadownload/vol-5-issue-1/10.%20Academic%20Anxiety%20among%20High%20School%20Students%20in%20Relation%20to%20Gender%20and%20Type%20of%20Family%20-%20Dr.%20Chaman%200Lal%20Banga%20Vol-5-Issue-1.pdf>
- Mallik, A., & Russo, F. A. (2022). The effects of music & auditory beat stimulation on anxiety: A randomized clinical trial. *PLOS ONE*, 17(3), e0259312. <https://doi.org/10.1371/journal.pone.0259312>

- Meier, S. M., et al. (2016). Increased mortality among people with anxiety disorders: total population study. *British Journal of Psychiatry*, 209(3), 216–221. <https://doi.org/10.1192/bjp.bp.115.171975>
- Roche, M.A., Back, E. & Van Herwegen, J. (2023). Parental perspectives on the use of fidget toys and sensory-seeking profiles in autistic and neurotypical children. *Current Psychology*, 43. <https://doi.org/10.1007/s12144-023-05483-3>
- Robison,E. (2019). OPINION: Chewing Gum in Schools. NCS Newspaper. <https://ncsgrowlnews.com/1387/student-life/opinion-chewing-gum-in-schools/>
- Slater, D. (2008). Digital Commons@Georgia Southern An Innovative Use of Fidget Toys in a University Classroom An Innovative Use of Fidget Toys in a University Classroom. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=4fe250f8e409ad2af0d5a7eb855ccfa9acacad31>
- Smith, A. P. (2016). Chewing gum and stress reduction. *Journal of Clinical and Translational Research*, 2(2), 52–54. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6410656/>
- “Stress Main Factor Driving Teens to Abuse Drugs, Alcohol.” (2014). Schoolhealthny.com. <https://www.schoolhealthny.com/site/Default.aspx?PageType=3&DomainID=4&PageID=1&ViewID=7b97f7ed-8e5e-4120-848f-a8b4987d588f&FlexDataID=8982>