

CHAPTER 8

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8. APPRAISAL

8.1 SUMMARY OF THE FINDINGS

There are several studies on chanting suggesting they induce a psychotherapeutic effect (Gao et al., 2017). As per the knowledge of the authors, the current study is the first attempt to explore the effect of prosody/*Chandas* i.e., the rhythm used to chant shloka. The study recruited subjects in their early adolescence which is 11 to 13 years, it being a critical period of changes in behaviour, moods, and relationships causing emotional turbulence (Scott-Parker, 2017). We had 4 parallel group to eliminate the impact of language and meaning of the shloka/verse and identify the impact of *Chanda* alone. The results of our study showed augmentation of Positive emotional personality in adolescence in both *Chanda* Humming group and Shloka Chanting group when compared to English phrase and silent sitting groups. There was an overall reduction in anxiety levels when compared to the remaining three groups. There was a significant increase in the mindfulness scores in the humming as well as chanting groups. However, there was no change observed in the self-concept scales in the humming group. Studies undoubtedly show chanting has a positive effect on brain activities (Gao et al., 2017) but *Chanda* is certainly a subtler way of impacting the mind by regulating feelings and enhancing positive emotions and may also alter the brain activity and autonomic variations as a long-term effect, which is yet to be explored.

8.2 CONCLUSIONS

Humming of Sanskrit prosody has reported an overall reduction in anxiety levels when compared to the remaining three groups. However, there was a decrease in the anxiety levels in the chanting group as well. There was a significant increase in the mindfulness scores in the humming as well as chanting groups. Also, there was no change observed in the self-concept scales in the humming group. Beside this, the mantra chanting and only

humming the prosody without verse had a similar effect on both emotional personality features of positive and negative affect. The results also suggest amelioration in the positive affect following chanting and humming the prosody, although there were no changes in the negative effect.

8.2 IMPLICATIONS OF THE STUDY

- This is the first scientific study on exploring the impact of *Chandas* irrespective of language & meaning of the verse
- Based on the findings we can use *Chandas* along with chanting for added impact on emotions, mindfulness, anxiety, self-concept and neuropsychological variables like sustained attention and executive function

8.3 APPLICATIONS OF THE STUDY

- The findings of this study might play a potential role in academic performance.
- We might have a free tool to help children improve attention, awareness, mindfulness, self-concept, positive emotions and reduce anxiety.
- This tool can be easily used in school set-up without disturbing the curriculum and time-table of the school system.
- Based on this preliminary effort, we can further conduct studies for children with special needs.

8.4 STRENGTH OF THE STUDY

- This is the first study as per our knowledge to scientifically explore the impact of prosody or *Chanda* aspect of chanting which is also an integral part of yoga.
- Another strength of the study is that we had four groups to eliminate the impact of language and meaning of the verse to study the effect of *Chandas* alone.
- We designed our study in a way that could be conducted in regular school setup without disturbing the time-table or schedule of classes.

- Since we did the orientation in the presence of teachers and positively motivated the students to participate, we had no drop-outs and very regular participation.

8.5 LIMITATIONS OF THE STUDY

- Randomization into 4 groups couldn't be done as the school management wouldn't allow shuffling children from their sections.
- The subjects were not stratified based on their gender, as females tend to face more negative affect than males, which can also be considered as a limitation to the study.
- As it was a preliminary study with no scientific evidence, we only used psychological tools and no objective parameters like EEG or fMRI were taken.
- Since it was the first study of this kind, we only got permission to conduct it for one month, which is certainly not sufficient to such subtle practice to show noticeable impact.

8.6 SUGGESTIONS FOR FUTURE STUDIES

- Duration of intervention can be increased to see long term effect of *Chandas* as 30 days is certainly insufficient
- Population can include govt. schools, international schools along with the usual CBSE Indian schools to compare the results
- More *Chandas* must be tested and included as intervention to see their specific qualities and impact.

CHAPTER 9
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APPENDICES

Appendix 1: IEC Clearance Certificate



स्वामी विवेकानन्द योग अनुसंधान संस्थान

Swami Vivekananda Yoga Anusandhāna Samsthāna

(Declared as Deemed-to-be University under Section 3 of the UGC Act, 1956)

Eknaath Bhavan, # 19, Gavipuram Circle, Kempegowda Nagar, Bangalore - 560 019
Ph: 080 - 2661 2669, Telefax: 080 - 2660 8645
E-mail: svyasa@svyasa.org Website: www.svyasa.org

Institutional Ethics Committee Addendum

Ref: RES/IEC-SVYASA/130/2019/Add1 Date: 11th November, 2021

To,
Ms. Mollika Ganguly,
Research Scholar,
S-VYASA Yoga University,
Bangalore.

Reference:

1. IEC approved study number RES/IEC-SVYASA/130/2019
2. Request for amendments to the approved study and justification for the same in the email dated 12th October, 2021.

Dear Ms. Mollika Ganguly,

In response to your request for changing the following: (1) title of the study to "*Chandayoga: Its Effects on Mindfulness, Anxiety, Emotions, Self-concept and Neuropsychological Variables in Adolescents*", (2) adding three new assessments and removing one, we are hereby issuing an Addendum to your previously IEC-SVYASA approved study [RES/IEC-SVYASA/130/2019] certificate dated 06th June, 2019.

IEC-SVYASA has reviewed the Justification provided (email dated 12th October, 2021), and found the changes to be acceptable.

All the other terms and conditions mentioned (if any) in the original certificate continue to hold good.

Please retain the original certificate and append this addendum for all official purpose.


Best Wishes,

Dr. Ramesh M N

Member Secretary,
Institutional Ethics Committee
S-VYASA Yoga University,
Bangalore.

Member Secretary
Institutional Ethics Committee
Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA)
No. 19, Eknaath Bhavan, Gavipuram Circle
K.G. Nagar, Bangalore-560019

Appendix 2: Informed Consent Form



Institutional Ethics Committee
INFORMED CONSENT FORM

Swami Vivekananda Yoga Anusandhana Samsthana

This informed consent form is for individuals both male and female to participate in this research on CHANDAS.
The title of my study is "Effect of Chandas On Psychological and cognitive changes in school children"

Name of Principal Investigator : Mollika Ganguly | g.26mollika@gmail.com | +91 8277080417
Name of Organization : SVYASA University

Purpose of the research
Chandas are meters in Sanskrit language that have been inspired from the rhythms of Nature and her creations. So far, we do not have any scientific evidence for the benefits of Chandas although in ancient text there are mention about various instances where Chandas have worked as therapy to cure diseases. We hypothesize that the use of *Chandas*, having embedded in them specific breath patterns that synchronize with the rhythms of the brain, can therefore help improving psychological indices, cognitive skills and mindfulness scales in children.

Type of Research Intervention
The research involves administering Chandas on individuals. It is a 4-arm study where participants will practice Shlokas with Chandas, shlokas without Chandas, Chandas alone with humming and silent sitting.

Voluntary Participation
The participants are free to volunteer in this study. No sort of compulsion would be made from our side.

Benefits
A lot of studies are present showing the benefits of chanting, music etc. Chandas being from the same genre is expected to give similar benefits. Enhancement of Mindfulness and psycho-physiological well-being of the individual is expected.

Confidentiality
The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away and no-one, but the researchers will be able to see it.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked to have been answered to my satisfaction. I consent voluntarily and allow my child to participate as a participant in this research.

Name of Participant _____ | Name of Parent _____
Signature of Parent _____
Date _____ (DD/MM/YYYY)

Appendix 3: Questionnaires and Scales

Appendix 3.1: Positive and Negative Affect Scale – Children (PANAS – C)

Positive and Negative Affect Scale for Children (PANAS-C)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way during the past week.

1 = Very slightly 2 = A little 3 = Moderately 4 = Quite a bit 5 =
Extremely

| | | | | | |
|------------|---|---|---|---|---|
| Interested | 1 | 2 | 3 | 4 | 5 |
| Sad | 1 | 2 | 3 | 4 | 5 |
| Frightened | 1 | 2 | 3 | 4 | 5 |
| Alert | 1 | 2 | 3 | 4 | 5 |
| Excited | 1 | 2 | 3 | 4 | 5 |
| Ashamed | 1 | 2 | 3 | 4 | 5 |
| Upset | 1 | 2 | 3 | 4 | 5 |
| Happy | 1 | 2 | 3 | 4 | 5 |
| Strong | 1 | 2 | 3 | 4 | 5 |
| Nervous | 1 | 2 | 3 | 4 | 5 |
| Guilty | 1 | 2 | 3 | 4 | 5 |
| Energetic | 1 | 2 | 3 | 4 | 5 |
| Scared | 1 | 2 | 3 | 4 | 5 |
| Calm | 1 | 2 | 3 | 4 | 5 |
| Miserable | 1 | 2 | 3 | 4 | 5 |
| Jittery | 1 | 2 | 3 | 4 | 5 |
| Cheerful | 1 | 2 | 3 | 4 | 5 |
| Active | 1 | 2 | 3 | 4 | 5 |
| Proud | 1 | 2 | 3 | 4 | 5 |
| Afraid | 1 | 2 | 3 | 4 | 5 |
| Joyful | 1 | 2 | 3 | 4 | 5 |
| Lonely | 1 | 2 | 3 | 4 | 5 |
| Mad | 1 | 2 | 3 | 4 | 5 |
| Fearless | 1 | 2 | 3 | 4 | 5 |
| Disgusted | 1 | 2 | 3 | 4 | 5 |
| Blue | 1 | 2 | 3 | 4 | 5 |
| Daring | 1 | 2 | 3 | 4 | 5 |
| Gloomy | 1 | 2 | 3 | 4 | 5 |
| Lively | 1 | 2 | 3 | 4 | 5 |

Appendix 3.2: Digit Letter Substitution Test (DLST)

Digit letter substitutions test

Instructions:

Substitute the digits with corresponding letter as per the given key.

Substitute as many possible within the given time.

Start and stop only when told.

Substitute Letters:

1 2 3 4 5 6 7 8 9

L H Y N R E D T J

6 2 4 1 5 7 9 3 2 6 8 5

5 4 7 8 1 2 3 4 9 6 3 7

2 4 6 7 8 9 3 1 2 3 7 4

2 9 4 6 8 1 2 5 9 3 4 7

9 7 4 2 3 8 1 5 6 2 9 1

8 6 2 3 9 4 5 7 1 4 3 9

3 5 9 1 2 5 6 2 7 8 9 1

5 4 9 2 7 1 3 2 8 9 5 6

Appendix 3.3: STROOP Color-Word Test

Page – 1

21

STROOP

COLOR AND WORD TEST

ADULT VERSION

Name: _____

Age: _____ Sex: _____ Date: _____

FOR PROFESSIONAL USE ONLY

| | Raw Score | Age/Ed. Predicted* | Residual | T-Scores** |
|---|-----------|--------------------|----------|------------|
| Word Score (W) | | | | |
| Color Score (C) | | | | |
| Color-Word Score (CW) | | | | |
| CW - Predicted = Interference (Table V) ____ - ____ = _____ | | | | |

* This comes from Tables I - III.

** This should come from Table IV or VI.

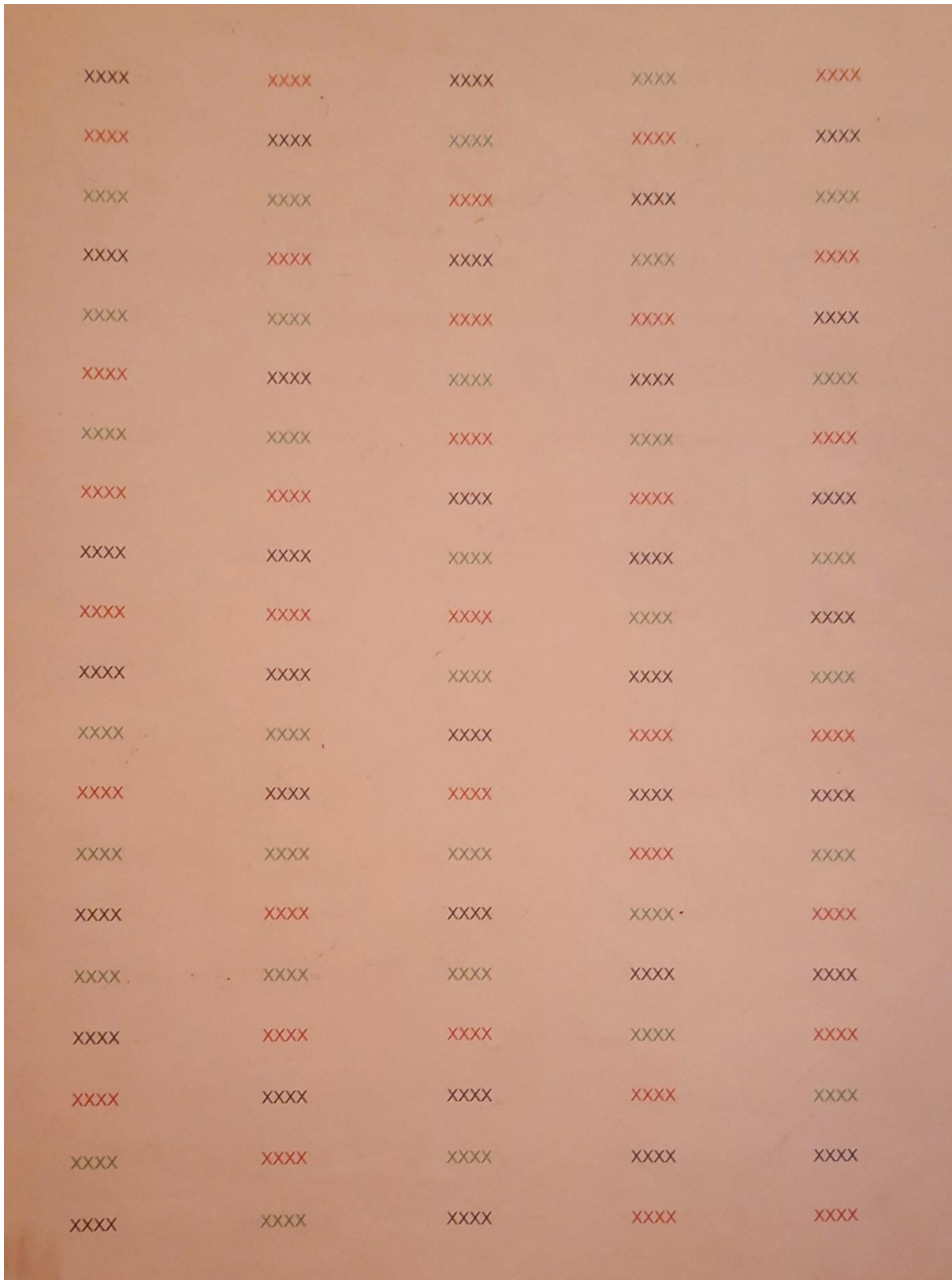
DO NOT OPEN THE BOOKLET UNTIL YOU ARE INSTRUCTED TO DO SO



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#30150A REV. 01/07

| | | | | |
|-------|-------|-------|-------|-------|
| RED | BLUE | GREEN | RED | BLUE |
| GREEN | GREEN | RED | BLUE | GREEN |
| BLUE | RED | BLUE | GREEN | RED |
| GREEN | BLUE | RED | RED | BLUE |
| RED | RED | GREEN | BLUE | GREEN |
| BLUE | GREEN | BLUE | GREEN | RED |
| RED | BLUE | GREEN | BLUE | GREEN |
| BLUE | GREEN | RED | GREEN | RED |
| GREEN | RED | BLUE | RED | BLUE |
| BLUE | GREEN | GREEN | BLUE | GREEN |
| GREEN | RED | BLUE | RED | RED |
| RED | BLUE | RED | GREEN | BLUE |
| GREEN | RED | BLUE | RED | GREEN |
| BLUE | BLUE | RED | GREEN | RED |
| RED | GREEN | GREEN | BLUE | BLUE |
| BLUE | BLUE | RED | GREEN | RED |
| RED | GREEN | BLUE | RED | GREEN |
| GREEN | RED | GREEN | BLUE | BLUE |
| RED | BLUE | RED | GREEN | RED |
| GREEN | RED | GREEN | BLUE | GREEN |



| | | | | |
|-------|-------|-------|-------|-------|
| RED | BLUE | GREEN | RED | BLUE |
| GREEN | GREEN | RED | BLUE | GREEN |
| BLUE | RED | BLUE | GREEN | RED |
| GREEN | BLUE | RED | RED | BLUE |
| RED | RED | GREEN | BLUE | GREEN |
| BLUE | GREEN | BLUE | GREEN | RED |
| RED | BLUE | GREEN | BLUE | GREEN |
| BLUE | GREEN | RED | GREEN | RED |
| GREEN | RED | BLUE | RED | BLUE |
| BLUE | GREEN | GREEN | BLUE | GREEN |
| GREEN | RED | BLUE | RED | RED |
| RED | BLUE | RED | GREEN | BLUE |
| GREEN | RED | BLUE | RED | GREEN |
| BLUE | BLUE | RED | GREEN | RED |
| RED | GREEN | GREEN | BLUE | BLUE |
| BLUE | BLUE | RED | GREEN | RED |
| RED | GREEN | BLUE | RED | GREEN |
| GREEN | RED | GREEN | BLUE | BLUE |
| RED | BLUE | RED | GREEN | RED |
| GREEN | RED | GREEN | BLUE | GREEN |

Appendix 3.4: Children's Self-concept Scale (CSCS)

Page – 1

| Sr. No. | Statements | YES | NO |
|---------|--|-----|----|
| 1. | My classmates make fun of me | | |
| 2. | I am a Happy person | | |
| 3. | It's hard for me to make friends | | |
| 4. | I am often sad | | |
| 5. | I am Smart | | |
| 6. | I am Shy | | |
| 7. | I get nervous when the teacher calls on me | | |
| 8. | My looks bother me | | |
| 9. | When I grow up I will be an important person | | |
| 10. | I get worried when we have tests in school | | |
| 11. | I am unpopular | | |
| 12. | I am well behaved in school | | |
| 13. | It is usually my fault when something goes wrong | | |
| 14. | I cause trouble to my family | | |
| 15. | I am strong | | |
| 16. | I have good ideas | | |
| 17. | I am an important member of my family | | |
| 18. | I usually want my own way | | |
| 19. | I am good in making things with my hands | | |
| 20. | I give up easily | | |
| 21. | I am good in my school work | | |
| 22. | I do many bad things | | |
| 23. | I can draw well | | |
| 24. | I am good in music | | |
| 25. | I behave badly at home | | |
| 26. | I am slow in finishing my school work | | |
| 27. | I am an important member of my class | | |
| 28. | I am nervous | | |
| 29. | I have fine eyes | | |
| 30. | I can give good report in front of the class | | |
| 31. | In school I am a dreamer | | |
| 32. | I tease my brother (s) and Sister (s) | | |
| 33. | My friends like my ideas | | |
| 34. | I often get into trouble | | |
| 35. | I am obedient at home | | |
| 36. | I am lucky | | |
| 37. | I worry a lot | | |
| 38. | My parents expect too much from me | | |
| 39. | I like being the way I am | | |
| 40. | I feel left out of things | | |
| 41. | I have good hair | | |
| 42. | I often volunteer in school | | |
| 43. | I wish I were different | | |

| | | | |
|-----|---|--|--|
| 44. | I sleep well at night | | |
| 45. | I hate school | | |
| 46. | I am among the last to be chosen for games | | |
| 47. | I am sick a lot | | |
| 48. | I am often mean to other people | | |
| 49. | My classmates in school think I have good ideas | | |
| 50. | I am unhappy | | |
| 51. | I have many friends | | |
| 52. | I am cheerful | | |
| 53. | I am dumb about most things | | |
| 54. | I am good looking | | |
| 55. | I have energy | | |
| 56. | I get into a lot of fights | | |
| 57. | I am popular with bossy | | |
| 58. | People blame unjustly or tease me | | |
| 59. | My family is disappointed in me | | |
| 60. | I have disagreeable face | | |
| 61. | When I try to make something, everything seems to g wrong | | |
| 62. | I am nagged at home | | |
| 63. | I am leader in games & Sports | | |
| 64. | I am clumsy | | |
| 65. | In games & Sports, I watch instead of play | | |
| 66. | I forget what I learn | | |
| 67. | I am easy to get along with | | |
| 68. | I lose my temper easily | | |
| 69. | I am popular with girls | | |
| 70. | I am a good reader | | |
| 71. | I would rather work alone than with a group | | |
| 72. | I like my brother/sister | | |
| 73. | I have a good figure | | |
| 74. | I am often afraid | | |
| 75. | I am always dropping or breaking things | | |
| 76. | I can be trusted | | |
| 77. | I am different from other people | | |
| 78. | I think bad thoughts | | |
| 79. | I cry easily | | |
| 80. | I am a good person | | |

Appendix 3.5: Mindfulness Attention Awareness Scale For Children (Maas – C)

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--|------------------|--------------------|------------------------|--------------------------|----------------------|-----------------|
| | Almost Always | Very Frequently | Somewhat Frequently | Somewhat Infrequently | Very Infrequently | Almost Never |
| I could be experiencing some emotion and not be conscious of it until some time later. | 1 | 2 | 3 | 4 | 5 | 6 |
| I break or spill things because of carelessness, not paying attention, or thinking of something else. | 1 | 2 | 3 | 4 | 5 | 6 |
| I find it difficult to stay focused on what's happening in the present. | 1 | 2 | 3 | 4 | 5 | 6 |
| I tend to walk quickly to get where I'm going without paying attention to what I experience along the way. | 1 | 2 | 3 | 4 | 5 | 6 |
| I tend not to notice feelings of physical tension or discomfort until they really grab my attention. | 1 | 2 | 3 | 4 | 5 | 6 |
| I forget a person's name almost as soon as I've been told it for the first time. | 1 | 2 | 3 | 4 | 5 | 6 |
| It seems I am "running on automatic," without much awareness of what I'm doing. | 1 | 2 | 3 | 4 | 5 | 6 |
| I rush through activities without being really attentive to them. | 1 | 2 | 3 | 4 | 5 | 6 |
| I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there. | 1 | 2 | 3 | 4 | 5 | 6 |
| I do jobs or tasks automatically, without being aware of what I'm doing. | 1 | 2 | 3 | 4 | 5 | 6 |
| I find myself listening to someone with one ear, doing something else at the same time. | 1 | 2 | 3 | 4 | 5 | 6 |
| I drive places on 'automatic pilot' and then wonder why I went there. | 1 | 2 | 3 | 4 | 5 | 6 |
| I find myself preoccupied with the future or the past. | 1 | 2 | 3 | 4 | 5 | 6 |
| I find myself doing things without paying attention. | 1 | 2 | 3 | 4 | 5 | 6 |
| I snack without being aware that I'm eating. | 1 | 2 | 3 | 4 | 5 | 6 |

Appendix 3.6: Spence Children's Anxiety Scale (SCAS)

Page – 1

SPENCE CHILDREN'S ANXIETY SCALE

Your Name: Date: _____

PLEASE PUT A CIRCLE AROUND THE WORD THAT SHOWS HOW OFTEN EACH OF THESE THINGS HAPPEN TO YOU. THERE ARE NO RIGHT OR WRONG ANSWERS.

| | | | | | |
|-----|--|-------|-----------|-------|--------|
| 1. | I worry about things..... | Never | Sometimes | Often | Always |
| 2. | I am scared of the dark..... | Never | Sometimes | Often | Always |
| 3. | When I have a problem, I get a funny feeling in my stomach..... | Never | Sometimes | Often | Always |
| 4. | I feel afraid..... | Never | Sometimes | Often | Always |
| 5. | I would feel afraid of being on my own at home..... | Never | Sometimes | Often | Always |
| 6. | I feel scared when I have to take a test..... | Never | Sometimes | Often | Always |
| 7. | I feel afraid if I have to use public toilets or bathrooms..... | Never | Sometimes | Often | Always |
| 8. | I worry about being away from my parents..... | Never | Sometimes | Often | Always |
| 9. | I feel afraid that I will make a fool of myself in front of people..... | Never | Sometimes | Often | Always |
| 10. | I worry that I will do badly at my school work..... | Never | Sometimes | Often | Always |
| 11. | I am popular amongst other kids my own age..... | Never | Sometimes | Often | Always |
| 12. | I worry that something awful will happen to someone in my family..... | Never | Sometimes | Often | Always |
| 13. | I suddenly feel as if I can't breathe when there is no reason for this..... | Never | Sometimes | Often | Always |
| 14. | I have to keep checking that I have done things right (like the switch is off, or the door is locked)..... | Never | Sometimes | Often | Always |
| 15. | I feel scared if I have to sleep on my own..... | Never | Sometimes | Often | Always |
| 16. | I have trouble going to school in the mornings because I feel nervous or afraid..... | Never | Sometimes | Often | Always |
| 17. | I am good at sports..... | Never | Sometimes | Often | Always |
| 18. | I am scared of dogs..... | Never | Sometimes | Often | Always |
| 19. | I can't seem to get bad or silly thoughts out of my head..... | Never | Sometimes | Often | Always |
| 20. | When I have a problem, my heart beats really fast..... | Never | Sometimes | Often | Always |
| 21. | I suddenly start to tremble or shake when there is no reason for this... | Never | Sometimes | Often | Always |
| 22. | I worry that something bad will happen to me..... | Never | Sometimes | Often | Always |
| 23. | I am scared of going to the doctors or dentists..... | Never | Sometimes | Often | Always |
| 24. | When I have a problem, I feel shaky..... | Never | Sometimes | Often | Always |
| 25. | I am scared of being in high places or lifts (elevators)..... | Never | Sometimes | Often | Always |

| | | | | |
|--|-------|-----------|-------|--------|
| 26. I am a good person..... | Never | Sometimes | Often | Always |
| 27. I have to think of special thoughts to stop bad things from happening (like numbers or words)..... | Never | Sometimes | Often | Always |
| 28. I feel scared if I have to travel in the car, or on a Bus or a train..... | Never | Sometimes | Often | Always |
| 29. I worry what other people think of me..... | Never | Sometimes | Often | Always |
| 30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds)..... | Never | Sometimes | Often | Always |
| 31. I feel happy..... | Never | Sometimes | Often | Always |
| 32. All of a sudden I feel really scared for no reason at all..... | Never | Sometimes | Often | Always |
| 33. I am scared of insects or spiders..... | Never | Sometimes | Often | Always |
| 34. I suddenly become dizzy or faint when there is no reason for this..... | Never | Sometimes | Often | Always |
| 35. I feel afraid if I have to talk in front of my class..... | Never | Sometimes | Often | Always |
| 36. My heart suddenly starts to beat too quickly for no reason..... | Never | Sometimes | Often | Always |
| 37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of..... | Never | Sometimes | Often | Always |
| 38. I like myself..... | Never | Sometimes | Often | Always |
| 39. I am afraid of being in small closed places, like tunnels or small rooms. | Never | Sometimes | Often | Always |
| 40. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)..... | Never | Sometimes | Often | Always |
| 41. I get bothered by bad or silly thoughts or pictures in my mind..... | Never | Sometimes | Often | Always |
| 42. I have to do some things in just the right way to stop bad things happening..... | Never | Sometimes | Often | Always |
| 43. I am proud of my school work..... | Never | Sometimes | Often | Always |
| 44. I would feel scared if I had to stay away from home overnight..... | Never | Sometimes | Often | Always |
| 45. Is there something else that you are really afraid of?..... | YES | NO | | |
| Please write down what it is _____ | | | | |
| _____ | | | | |
| _____ | | | | |
| How often are you afraid of this thing?..... | Never | Sometimes | Often | Always |

APPENDIX 4: LIST OF PUBLICATIONS FOR THIS DOCTORAL THESIS

1. Ganguly, M., Mohanty, S., Mishra, S., Patra, S., & Jha, M. (2021). Impact of Sanskrit prosody on anxiety, mindfulness, and self-concept in young adolescents: A four-armed control trial. *Yoga Mimamsa*, 53(1), 4.
2. Ganguly, M., Mohanty, S., Mishra, S., & Patra, S. (2021). Effect of Prosody of Rhythmic Yoga-Based Recitation on Positive and Negative Affect among Adolescents: A Four-Armed Comparative Study. *Dev Sanskriti Interdisciplinary International Journal*, 17, 13-19.
3. Ganguly, M. M., Mohanty, S., Mishra, S., & Patra, S. Sanskrit Prosody: A Potential Tool To Impact Neuropsychological Variables In Middle School Children.

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RAW DATA –

Digit Letter Substitution Test:

| Group – Chanting | | |
|------------------|----------|-----------|
| Student Name | DLST_Pre | DLST_Post |
| C- Student 1 | 32 | 32 |
| C- Student 2 | 56 | 46 |
| C- Student 3 | 43 | 51 |
| C- Student 4 | 37 | 51 |
| C- Student 5 | 48 | 56 |
| C- Student 6 | 18 | 24 |
| C- Student 7 | 51 | 60 |
| C- Student 8 | 96 | 66 |
| C- Student 9 | 65 | 54 |
| C- Student 10 | 48 | 50 |
| C- Student 11 | 41 | 50 |
| C- Student 12 | 57 | 62 |
| C- Student 13 | 33 | 43 |
| C- Student 14 | 45 | 50 |
| C- Student 15 | 52 | 58 |
| C- Student 16 | 75 | 82 |
| C- Student 17 | 30 | 42 |
| C- Student 18 | 48 | 60 |
| C- Student 19 | 72 | 77 |
| C- Student 20 | 48 | 56 |
| C- Student 21 | 62 | 65 |
| C- Student 22 | 60 | 68 |
| C- Student 23 | 55 | 60 |
| C- Student 24 | 28 | 32 |
| C- Student 25 | 75 | 78 |
| C- Student 26 | 63 | 71 |
| C- Student 27 | 53 | 69 |
| C- Student 28 | 42 | 42 |
| C- Student 29 | 60 | 60 |
| C- Student 30 | 44 | 45 |
| C- Student 31 | 45 | 44 |
| C- Student 32 | 16 | 55 |
| C- Student 33 | 28 | 36 |
| C- Student 34 | 41 | 40 |
| C- Student 35 | 62 | 73 |

| Group – English Phrase Reading | | |
|--------------------------------|----------|-----------|
| Student Name | DLST_Pre | DLST_Post |
| EPR- Student 1 | 33 | 38 |
| EPR- Student 2 | 33 | 36 |
| EPR- Student 3 | 29 | 60 |
| EPR- Student 4 | 42 | 47 |
| EPR- Student 5 | 36 | 45 |
| EPR- Student 6 | 34 | 40 |
| EPR- Student 7 | 43 | 33 |
| EPR- Student 8 | 31 | 34 |
| EPR- Student 9 | 64 | 56 |
| EPR- Student 10 | 45 | 43 |
| EPR- Student 11 | 60 | 53 |
| EPR- Student 12 | 45 | 45 |
| EPR- Student 13 | 39 | 36 |
| EPR- Student 14 | 41 | 54 |
| EPR- Student 15 | 47 | 51 |
| EPR- Student 16 | 64 | 48 |
| EPR- Student 17 | 37 | 36 |
| EPR- Student 18 | 48 | 48 |
| EPR- Student 19 | 56 | 44 |
| EPR- Student 20 | 45 | 43 |
| EPR- Student 21 | 37 | 39 |
| EPR- Student 22 | 52 | 51 |
| EPR- Student 23 | 41 | 39 |
| EPR- Student 24 | 51 | 50 |
| EPR- Student 25 | 21 | 34 |
| EPR- Student 26 | 49 | 63 |
| EPR- Student 27 | 52 | 62 |
| EPR- Student 28 | 48 | 41 |
| EPR- Student 29 | 48 | 44 |
| EPR- Student 30 | 38 | 36 |

| Group – Humming a Chanda | | |
|--------------------------|----------|-----------|
| Student Name | DLST_Pre | DLST_Post |
| H- Student 1 | 48 | 48 |
| H- Student 2 | 40 | 38 |
| H- Student 3 | 34 | 48 |
| H- Student 4 | 55 | 68 |
| H- Student 5 | 41 | 44 |
| H- Student 6 | 51 | 84 |
| H- Student 7 | 85 | 96 |
| H- Student 8 | 22 | 24 |

| | | |
|---------------|----|----|
| H- Student 9 | 40 | 45 |
| H- Student 10 | 35 | 45 |
| H- Student 11 | 30 | 36 |
| H- Student 12 | 13 | 48 |
| H- Student 13 | 28 | 34 |
| H- Student 14 | 38 | 38 |
| H- Student 15 | 32 | 35 |
| H- Student 16 | 41 | 53 |
| H- Student 17 | 77 | 81 |
| H- Student 18 | 45 | 67 |
| H- Student 19 | 24 | 25 |
| H- Student 20 | 44 | 53 |
| H- Student 21 | 43 | 45 |
| H- Student 22 | 32 | 36 |
| H- Student 23 | 35 | 37 |
| H- Student 24 | 24 | 45 |
| H- Student 25 | 26 | 33 |
| H- Student 26 | 32 | 41 |
| H- Student 27 | 44 | 48 |
| H- Student 28 | 38 | 55 |
| H- Student 29 | 26 | 52 |
| H- Student 30 | 60 | 63 |
| H- Student 31 | 38 | 41 |
| H- Student 32 | 42 | 48 |
| H- Student 33 | 43 | 53 |
| H- Student 34 | 38 | 34 |
| H- Student 35 | 46 | 33 |

| Group – Silent Sitting | | |
|------------------------|----------|-----------|
| Student Name | DLST_Pre | DLST_Post |
| SS- Student 1 | 95 | 96 |
| SS- Student 2 | 44 | 53 |
| SS- Student 3 | 41 | 48 |
| SS- Student 4 | 46 | 37 |
| SS- Student 5 | 51 | 51 |
| SS- Student 6 | 39 | 44 |
| SS- Student 7 | 38 | 48 |
| SS- Student 8 | 26 | 23 |
| SS- Student 9 | 38 | 68 |
| SS- Student 10 | 50 | 48 |
| SS- Student 11 | 32 | 49 |
| SS- Student 12 | 44 | 43 |
| SS- Student 13 | 47 | 47 |

| | | |
|----------------|----|----|
| SS- Student 14 | 51 | 46 |
| SS- Student 15 | 29 | 33 |
| SS- Student 16 | 32 | 50 |
| SS- Student 17 | 19 | 35 |
| SS- Student 18 | 31 | 45 |
| SS- Student 19 | 41 | 43 |
| SS- Student 20 | 46 | 48 |
| SS- Student 21 | 37 | 45 |
| SS- Student 22 | 44 | 48 |
| SS- Student 23 | 45 | 53 |
| SS- Student 24 | 37 | 26 |
| SS- Student 25 | 58 | 72 |
| SS- Student 26 | 48 | 41 |
| SS- Student 27 | 32 | 43 |
| SS- Student 28 | 58 | 57 |
| SS- Student 29 | 26 | 45 |
| SS- Student 30 | 43 | 52 |
| SS- Student 31 | 43 | 48 |
| SS- Student 32 | 48 | 38 |
| SS- Student 33 | 38 | 48 |
| SS- Student 34 | 35 | 43 |
| SS- Student 35 | 48 | 50 |
| SS- Student 36 | 48 | 50 |
| SS- Student 37 | 24 | 26 |
| SS- Student 38 | 30 | 39 |

Stroop color-word test:

| Group – Chanting | | | | |
|------------------|------------|---------------------|-------------|----------------------|
| Student Name | Stroop_Pre | Stroop_Pre/Mistakes | Stroop_Post | Stroop_Post/Mistakes |
| C- Student 1 | 43 | 5 | 54 | 2 |
| C- Student 2 | 100 | 5 | 100 | 2 |
| C- Student 3 | 75 | 4 | 84 | 3 |
| C- Student 4 | 85 | 1 | 78 | 3 |
| C- Student 5 | 74 | 8 | 71 | 7 |
| C- Student 6 | 56 | 2 | 61 | 3 |
| C- Student 7 | 68 | 8 | 68 | 7 |
| C- Student 8 | 84 | 4 | 85 | 4 |
| C- Student 9 | 70 | 4 | 85 | 4 |
| C- Student 10 | 60 | 4 | 62 | 6 |
| C- Student 11 | 67 | 3 | 72 | 4 |
| C- Student 12 | 87 | 9 | 91 | 7 |

| | | | | |
|---------------|----|---|-----|---|
| C- Student 13 | 60 | 6 | 75 | 3 |
| C- Student 14 | 59 | 0 | 90 | 5 |
| C- Student 15 | 67 | 5 | 88 | 5 |
| C- Student 16 | 44 | 7 | 100 | 8 |
| C- Student 17 | 73 | 4 | 75 | 6 |
| C- Student 18 | 69 | 5 | 88 | 0 |
| C- Student 19 | 78 | 2 | 80 | 2 |
| C- Student 20 | 61 | 4 | 47 | 0 |
| C- Student 21 | 68 | 5 | 75 | 4 |
| C- Student 22 | 60 | 4 | 60 | 3 |
| C- Student 23 | 86 | 4 | 87 | 5 |
| C- Student 24 | 78 | 6 | 76 | 3 |
| C- Student 25 | 67 | 5 | 71 | 4 |
| C- Student 26 | 95 | 5 | 100 | 6 |
| C- Student 27 | 75 | 6 | 83 | 3 |
| C- Student 28 | 66 | 2 | 72 | 3 |
| C- Student 29 | 82 | 4 | 84 | 6 |
| C- Student 30 | 51 | 5 | 54 | 2 |
| C- Student 31 | 75 | 6 | 70 | 5 |
| C- Student 32 | 67 | 5 | 77 | 2 |
| C- Student 33 | 55 | 7 | 61 | 1 |
| C- Student 34 | 61 | 5 | 94 | 5 |
| C- Student 35 | 83 | 4 | 100 | 4 |

| Group – English Phrase Reading | | | | |
|--------------------------------|------------|---------------------|-------------|----------------------|
| Student Name | Stroop_Pre | Stroop_Pre/Mistakes | Stroop_Post | Stroop_Post/Mistakes |
| EPR- Student 1 | 42 | 4 | 49 | 5 |
| EPR- Student 2 | 45 | 4 | 50 | 1 |
| EPR- Student 3 | 51 | 3 | 61 | 0 |
| EPR- Student 4 | 51 | 7 | 67 | 1 |
| EPR- Student 5 | 56 | 5 | 79 | 8 |
| EPR- Student 6 | 57 | 2 | 90 | 7 |
| EPR- Student 7 | 60 | 0 | 67 | 1 |
| EPR- Student 8 | 60 | 4 | 58 | 4 |
| EPR- Student 9 | 61 | 6 | 80 | 8 |
| EPR- Student 10 | 62 | 7 | 64 | 3 |
| EPR- Student 11 | 64 | 2 | 72 | 3 |
| EPR- Student 12 | 65 | 4 | 73 | 4 |
| EPR- Student 13 | 66 | 3 | 80 | 6 |
| EPR- Student 14 | 66 | 5 | 69 | 3 |
| EPR- Student 15 | 69 | 4 | 65 | 6 |
| EPR- Student 16 | 70 | 2 | 75 | 1 |
| EPR- Student 17 | 70 | 4 | 87 | 4 |

| | | | | |
|-----------------|----|---|-----|---|
| EPR- Student 18 | 71 | 0 | 75 | 2 |
| EPR- Student 19 | 73 | 5 | 72 | 2 |
| EPR- Student 20 | 78 | 1 | 72 | 3 |
| EPR- Student 21 | 78 | 7 | 70 | 0 |
| EPR- Student 22 | 79 | 6 | 80 | 5 |
| EPR- Student 23 | 80 | 1 | 72 | 4 |
| EPR- Student 24 | 80 | 4 | 86 | 3 |
| EPR- Student 25 | 80 | 9 | 76 | 5 |
| EPR- Student 26 | 84 | 3 | 80 | 1 |
| EPR- Student 27 | 89 | 4 | 85 | 8 |
| EPR- Student 28 | 97 | 2 | 100 | 5 |
| EPR- Student 29 | 83 | 5 | 83 | 2 |
| EPR- Student 30 | 77 | 4 | 55 | 2 |

| Group – Humming | | | | |
|-----------------|------------|---------------------|-------------|----------------------|
| Student Name | Stroop_Pre | Stroop_Pre/Mistakes | Stroop_Post | Stroop_Post/Mistakes |
| H- Student 1 | 36 | 8 | 44 | 2 |
| H- Student 2 | 42 | 5 | 73 | 3 |
| H- Student 3 | 45 | 2 | 56 | 6 |
| H- Student 4 | 45 | 3 | 56 | 1 |
| H- Student 5 | 48 | 4 | 58 | 5 |
| H- Student 6 | 48 | 5 | 77 | 2 |
| H- Student 7 | 49 | 4 | 81 | 4 |
| H- Student 8 | 50 | 7 | 68 | 6 |
| H- Student 9 | 51 | 5 | 74 | 3 |
| H- Student 10 | 55 | 7 | 88 | 6 |
| H- Student 11 | 57 | 3 | 71 | 7 |
| H- Student 12 | 57 | 7 | 62 | 2 |
| H- Student 13 | 58 | 5 | 70 | 2 |
| H- Student 14 | 58 | 8 | 72 | 5 |
| H- Student 15 | 60 | 4 | 65 | 5 |
| H- Student 16 | 62 | 1 | 68 | 2 |
| H- Student 17 | 63 | 3 | 73 | 2 |
| H- Student 18 | 63 | 4 | 72 | 8 |
| H- Student 19 | 63 | 9 | 81 | 8 |
| H- Student 20 | 66 | 1 | 63 | 2 |
| H- Student 21 | 66 | 6 | 80 | 2 |
| H- Student 22 | 66 | 8 | 77 | 3 |
| H- Student 23 | 69 | 5 | 75 | 3 |
| H- Student 24 | 71 | 6 | 71 | 3 |
| H- Student 25 | 72 | 6 | 81 | 6 |
| H- Student 26 | 75 | 1 | 89 | 3 |
| H- Student 27 | 75 | 4 | 97 | 1 |

| | | | | |
|---------------|----|---|-----|---|
| H- Student 28 | 75 | 5 | 95 | 3 |
| H- Student 29 | 76 | 3 | 97 | 4 |
| H- Student 30 | 76 | 4 | 92 | 2 |
| H- Student 31 | 83 | 2 | 100 | 1 |
| H- Student 32 | 87 | 4 | 88 | 5 |
| H- Student 33 | 87 | 6 | 93 | 4 |
| H- Student 34 | 52 | 4 | 66 | 5 |
| H- Student 35 | 37 | 5 | 43 | 8 |

| Group – Silent Sitting | | | | |
|------------------------|------------|---------------------|-------------|----------------------|
| Student Name | Stroop_Pre | Stroop_Pre/Mistakes | Stroop_Post | Stroop_Post/Mistakes |
| SS- Student 1 | 46 | 8 | 53 | 4 |
| SS- Student 2 | 53 | 3 | 60 | 3 |
| SS- Student 3 | 55 | 6 | 63 | 2 |
| SS- Student 4 | 56 | 6 | 64 | 8 |
| SS- Student 5 | 57 | 4 | 63 | 1 |
| SS- Student 6 | 57 | 9 | 82 | 3 |
| SS- Student 7 | 58 | 5 | 65 | 3 |
| SS- Student 8 | 60 | 1 | 61 | 9 |
| SS- Student 9 | 61 | 7 | 72 | 6 |
| SS- Student 10 | 62 | 1 | 75 | 2 |
| SS- Student 11 | 62 | 4 | 60 | 4 |
| SS- Student 12 | 63 | 4 | 70 | 6 |
| SS- Student 13 | 64 | 7 | 82 | 7 |
| SS- Student 14 | 65 | 4 | 87 | 2 |
| SS- Student 15 | 65 | 4 | 60 | 3 |
| SS- Student 16 | 65 | 5 | 89 | 4 |
| SS- Student 17 | 66 | 5 | 77 | 5 |
| SS- Student 18 | 66 | 7 | 60 | 9 |
| SS- Student 19 | 69 | 4 | 90 | 3 |
| SS- Student 20 | 69 | 5 | 81 | 0 |
| SS- Student 21 | 69 | 6 | 79 | 6 |
| SS- Student 22 | 70 | 4 | 81 | 3 |
| SS- Student 23 | 70 | 9 | 93 | 6 |
| SS- Student 24 | 72 | 2 | 65 | 0 |
| SS- Student 25 | 72 | 3 | 94 | 1 |
| SS- Student 26 | 76 | 4 | 71 | 4 |
| SS- Student 27 | 76 | 5 | 81 | 5 |
| SS- Student 28 | 76 | 5 | 61 | 5 |
| SS- Student 29 | 80 | 2 | 90 | 9 |
| SS- Student 30 | 80 | 4 | 98 | 1 |
| SS- Student 31 | 83 | 4 | 90 | 4 |
| SS- Student 32 | 86 | 7 | 95 | 4 |

| | | | | |
|----------------|----|---|----|---|
| SS- Student 33 | 90 | 6 | 80 | 1 |
| SS- Student 34 | 56 | 5 | 58 | 3 |
| SS- Student 35 | 68 | 5 | 65 | 2 |
| SS- Student 36 | 83 | 2 | 81 | 2 |
| SS- Student 37 | 78 | 8 | 80 | 7 |
| SS- Student 38 | 83 | 4 | 64 | 0 |

Spence Children's Anxiety Scale Pre-Scores:

| Group – Chanting (SCAS Pre Scores) | | | | | | | |
|------------------------------------|---------------------|--------------------|------------------------|--------------------------------|--------------------|--------------------|-------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| C-Student 1 | 17 | 10 | 6 | 16 | 7 | 8 | 64 |
| C-Student 2 | 6 | 7 | 4 | 3 | 1 | 2 | 23 |
| C-Student 3 | 7 | 9 | 7 | 2 | 6 | 7 | 38 |
| C-Student 4 | 5 | 6 | 5 | 5 | 2 | 3 | 26 |
| C-Student 5 | 9 | 7 | 7 | 4 | 4 | 4 | 35 |
| C-Student 6 | 12 | 11 | 9 | 8 | 9 | 12 | 61 |
| C-Student 7 | 7 | 8 | 5 | 1 | 1 | 8 | 30 |
| C-Student 8 | 6 | 9 | 7 | 4 | 4 | 10 | 40 |
| C-Student 9 | 3 | 5 | 2 | 5 | 5 | 6 | 26 |
| C-Student 10 | 6 | 10 | 6 | 10 | 8 | 9 | 49 |
| C-Student 11 | 11 | 10 | 9 | 9 | 1 | 7 | 47 |
| C-Student 12 | 14 | 6 | 1 | 8 | 3 | 8 | 40 |
| C- | 13 | 7 | 6 | 9 | 1 | 5 | 41 |

| | | | | | | | |
|--------------|----|----|----|----|---|----|-----------|
| Student 13 | | | | | | | |
| C-Student 14 | 8 | 6 | 3 | 4 | 3 | 8 | 32 |
| C-Student 15 | 8 | 6 | 4 | 3 | 1 | 3 | 25 |
| C-Student 16 | 8 | 10 | 3 | 5 | 5 | 5 | 36 |
| C-Student 17 | 7 | 8 | 4 | 11 | 3 | 6 | 39 |
| C-Student 18 | 11 | 8 | 10 | 6 | 8 | 6 | 49 |
| C-Student 19 | 11 | 10 | 5 | 15 | 7 | 13 | 61 |
| C-Student 20 | 8 | 6 | 6 | 9 | 5 | 6 | 40 |
| C-Student 21 | 7 | 7 | 5 | 2 | 2 | 6 | 29 |
| C-Student 22 | 5 | 10 | 3 | 2 | 1 | 6 | 27 |
| C-Student 23 | 9 | 8 | 4 | 6 | 4 | 5 | 36 |
| C-Student 24 | 5 | 6 | 4 | 6 | 3 | 8 | 32 |
| C-Student 25 | 6 | 9 | 11 | 14 | 7 | 10 | 57 |
| C-Student 26 | 6 | 11 | 8 | 5 | 5 | 10 | 45 |
| C-Student 27 | 8 | 10 | 4 | 3 | 2 | 3 | 30 |
| C-Student 28 | 9 | 14 | 11 | 12 | 9 | 7 | 62 |
| C-Student 29 | 10 | 12 | 5 | 10 | 4 | 7 | 48 |
| C-Student 30 | 7 | 7 | 3 | 5 | 3 | 8 | 33 |
| C-Student | 10 | 11 | 8 | 8 | 6 | 8 | 51 |

| | | | | | | | |
|----------------|----|----|----|----|---|----|-----------|
| t 31 | | | | | | | |
| C-Student t 32 | 7 | 11 | 18 | 15 | 7 | 9 | 67 |
| C-Student t 33 | 6 | 7 | 3 | 2 | 1 | 4 | 23 |
| C-Student t 34 | 10 | 14 | 11 | 17 | 9 | 11 | 72 |
| C-Student t 35 | 12 | 9 | 2 | 13 | 5 | 14 | 55 |

| Group – English Phrase Reading (SCAS Pre Scores) | | | | | | | |
|---|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| EPR-Student 1 | 10 | 11 | 5 | 6 | 5 | 5 | 42 |
| EPR-Student 2 | 7 | 9 | 11 | 9 | 10 | 14 | 60 |
| EPR-Student 3 | 9 | 6 | 3 | 8 | 4 | 5 | 35 |
| EPR-Student 4 | 6 | 13 | 4 | 9 | 3 | 8 | 43 |
| EPR-Student 5 | 7 | 8 | 10 | 10 | 6 | 7 | 48 |
| EPR-Student 6 | 9 | 11 | 4 | 4 | 3 | 8 | 39 |
| EPR-Student 7 | 7 | 8 | 7 | 6 | 1 | 8 | 37 |
| EPR-Student 8 | 14 | 14 | 12 | 15 | 8 | 9 | 72 |
| EPR-Student 9 | 9 | 13 | 4 | 11 | 7 | 11 | 55 |
| EPR-Student 10 | 10 | 7 | 6 | 4 | 5 | 5 | 37 |
| EPR-Student 11 | 14 | 9 | 9 | 9 | 6 | 10 | 57 |
| EPR-Student 12 | 7 | 8 | 6 | 4 | 4 | 6 | 35 |

| | | | | | | | |
|----------------|----|----|----|----|----|----|-----------|
| EPR-Student 13 | 9 | 8 | 4 | 12 | 4 | 6 | 43 |
| EPR-Student 14 | 10 | 7 | 6 | 12 | 5 | 11 | 51 |
| EPR-Student 15 | 7 | 13 | 6 | 6 | 6 | 11 | 49 |
| EPR-Student 16 | 8 | 12 | 4 | 3 | 8 | 5 | 40 |
| EPR-Student 17 | 4 | 5 | 2 | 2 | 3 | 6 | 22 |
| EPR-Student 18 | 10 | 12 | 4 | 9 | 4 | 8 | 47 |
| EPR-Student 19 | 7 | 5 | 2 | 9 | 10 | 5 | 38 |
| EPR-Student 20 | 4 | 10 | 11 | 11 | 4 | 10 | 50 |
| EPR-Student 21 | 1 | 4 | 13 | 6 | 2 | 6 | 32 |
| EPR-Student 22 | 5 | 6 | 3 | 4 | 2 | 5 | 25 |
| EPR-Student 23 | 8 | 7 | 3 | 3 | 1 | 0 | 22 |
| EPR-Student 24 | 13 | 11 | 3 | 7 | 6 | 9 | 49 |
| EPR-Student 25 | 10 | 7 | 10 | 6 | 7 | 7 | 47 |
| EPR-Student 26 | 11 | 14 | 15 | 21 | 13 | 12 | 86 |
| EPR-Student 27 | 12 | 13 | 8 | 6 | 7 | 8 | 54 |
| EPR-Student 28 | 9 | 7 | 3 | 6 | 3 | 4 | 32 |
| EPR-Student 29 | 9 | 7 | 6 | 9 | 5 | 8 | 44 |
| EPR-Student 30 | 7 | 8 | 6 | 4 | 4 | 6 | 35 |

| Group – Humming (SCAS Pre Scores) | | | | | | | |
|--|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| H-Student 1 | 13 | 14 | 8 | 15 | 6 | 11 | 67 |
| H-Student 2 | 8 | 8 | 6 | 8 | 2 | 8 | 40 |
| H-Student 3 | 11 | 9 | 4 | 7 | 3 | 8 | 42 |
| H-Student 4 | 7 | 4 | 3 | 2 | 1 | 4 | 21 |
| H-Student 5 | 10 | 8 | 4 | 14 | 7 | 5 | 48 |
| H-Student 6 | 7 | 11 | 3 | 7 | 1 | 5 | 34 |
| H-Student 7 | 8 | 6 | 3 | 4 | 4 | 4 | 29 |
| H-Student 8 | 8 | 12 | 13 | 15 | 6 | 13 | 67 |
| H-Student 9 | 9 | 8 | 1 | 6 | 3 | 7 | 34 |
| H-Student 10 | 6 | 11 | 4 | 9 | 3 | 6 | 39 |
| H-Student 11 | 12 | 8 | 7 | 9 | 4 | 8 | 48 |
| H-Student 12 | 6 | 8 | 9 | 5 | 7 | 3 | 38 |
| H-Student 13 | 7 | 8 | 5 | 6 | 5 | 6 | 37 |
| H-Student 14 | 9 | 5 | 3 | 7 | 6 | 7 | 37 |
| H-Student 15 | 3 | 8 | 3 | 2 | 0 | 3 | 19 |
| H-Student 16 | 8 | 9 | 6 | 10 | 3 | 6 | 42 |
| H-Student 17 | 8 | 12 | 13 | 15 | 6 | 13 | 67 |
| H-Student | 6 | 9 | 6 | 12 | 6 | 10 | 49 |

| | | | | | | | |
|--------------|----|----|---|----|---|----|-----------|
| 18 | | | | | | | |
| H-Student 19 | 8 | 6 | 4 | 7 | 4 | 3 | 32 |
| H-Student 20 | 3 | 6 | 2 | 6 | 1 | 6 | 24 |
| H-Student 21 | 9 | 12 | 7 | 10 | 9 | 6 | 53 |
| H-Student 22 | 11 | 8 | 4 | 12 | 7 | 4 | 46 |
| H-Student 23 | 9 | 11 | 6 | 11 | 5 | 5 | 47 |
| H-Student 24 | 6 | 9 | 3 | 6 | 0 | 4 | 28 |
| H-Student 25 | 10 | 10 | 6 | 12 | 7 | 12 | 57 |
| H-Student 26 | 12 | 8 | 7 | 12 | 7 | 9 | 55 |
| H-Student 27 | 5 | 7 | 5 | 3 | 2 | 6 | 28 |
| H-Student 28 | 6 | 10 | 5 | 4 | 6 | 5 | 36 |
| H-Student 29 | 8 | 10 | 4 | 6 | 2 | 7 | 37 |
| H-Student 30 | 6 | 12 | 4 | 13 | 8 | 7 | 50 |
| H-Student 31 | 9 | 10 | 6 | 9 | 3 | 8 | 45 |
| H-Student 32 | 5 | 3 | 4 | 6 | 4 | 10 | 32 |
| H-Student 33 | 7 | 7 | 4 | 7 | 4 | 9 | 38 |
| H-Student 34 | 9 | 13 | 4 | 7 | 3 | 10 | 46 |
| H-Student 35 | 10 | 8 | 3 | 6 | 3 | 8 | 38 |

| Group – Silent Sitting (SCAS Pre Scores) | | | | | | | |
|---|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| SS-Student 1 | 4 | 5 | 2 | 11 | 5 | 8 | 35 |
| SS-Student 2 | 6 | 8 | 3 | 5 | 2 | 5 | 29 |
| SS-Student 3 | 8 | 6 | 1 | 3 | 0 | 4 | 22 |
| SS-Student 4 | 9 | 9 | 6 | 1 | 0 | 3 | 28 |
| SS-Student 5 | 5 | 6 | 2 | 4 | 3 | 4 | 24 |
| SS-Student 6 | 7 | 5 | 5 | 6 | 1 | 6 | 30 |
| SS-Student 7 | 8 | 9 | 4 | 3 | 3 | 4 | 31 |
| SS-Student 8 | 8 | 13 | 11 | 12 | 10 | 14 | 68 |
| SS-Student 9 | 6 | 8 | 6 | 6 | 3 | 11 | 40 |
| SS-Student 10 | 6 | 10 | 5 | 5 | 2 | 5 | 33 |
| SS-Student 11 | 16 | 12 | 13 | 10 | 2 | 9 | 62 |
| SS-Student 12 | 8 | 10 | 3 | 7 | 0 | 5 | 33 |
| SS-Student 13 | 4 | 9 | 3 | 2 | 2 | 1 | 21 |
| SS-Student 14 | 7 | 4 | 3 | 4 | 6 | 7 | 31 |
| SS-Student 15 | 10 | 10 | 9 | 10 | 8 | 12 | 59 |
| SS-Student 16 | 10 | 6 | 11 | 5 | 4 | 7 | 43 |
| SS-Student 17 | 8 | 8 | 6 | 10 | 6 | 7 | 45 |
| SS-Student | 4 | 5 | 4 | 6 | 4 | 7 | 30 |

| | | | | | | | |
|---------------|----|----|----|----|----|----|-----------|
| 18 | | | | | | | |
| SS-Student 19 | 7 | 8 | 3 | 4 | 6 | 6 | 34 |
| SS-Student 20 | 9 | 11 | 5 | 6 | 1 | 5 | 37 |
| SS-Student 21 | 6 | 9 | 4 | 9 | 4 | 3 | 35 |
| SS-Student 22 | 11 | 9 | 6 | 7 | 3 | 7 | 43 |
| SS-Student 23 | 5 | 7 | 6 | 9 | 1 | 7 | 35 |
| SS-Student 24 | 8 | 8 | 11 | 5 | 6 | 15 | 53 |
| SS-Student 25 | 9 | 12 | 6 | 6 | 3 | 8 | 44 |
| SS-Student 26 | 5 | 5 | 2 | 2 | 3 | 3 | 20 |
| SS-Student 27 | 8 | 14 | 6 | 13 | 8 | 10 | 59 |
| SS-Student 28 | 8 | 5 | 6 | 8 | 3 | 7 | 37 |
| SS-Student 29 | 8 | 10 | 4 | 5 | 4 | 4 | 35 |
| SS-Student 30 | 10 | 13 | 8 | 4 | 6 | 13 | 54 |
| SS-Student 31 | 8 | 10 | 2 | 6 | 3 | 6 | 35 |
| SS-Student 32 | 6 | 10 | 2 | 6 | 7 | 7 | 38 |
| SS-Student 33 | 8 | 9 | 4 | 8 | 3 | 7 | 39 |
| SS-Student 34 | 10 | 6 | 5 | 7 | 7 | 6 | 41 |
| SS-Student 35 | 11 | 8 | 8 | 10 | 11 | 11 | 59 |
| SS-Student 36 | 7 | 10 | 9 | 8 | 6 | 6 | 46 |

| | | | | | | | |
|---------------|----|---|----|---|---|----|-----------|
| SS-Student 37 | 5 | 8 | 2 | 3 | 2 | 6 | 26 |
| SS-Student 38 | 12 | 7 | 11 | 6 | 5 | 13 | 54 |

Spence Children's Anxiety Scale Post Scores:

| Group – Chanting (SCAS – Post Scores) | | | | | | | |
|--|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| C-Student 1 | 9 | 11 | 10 | 12 | 9 | 6 | 57 |
| C-Student 2 | 6 | 6 | 5 | 3 | 1 | 3 | 24 |
| C-Student 3 | 9 | 7 | 3 | 9 | 1 | 5 | 34 |
| C-Student 4 | 7 | 8 | 6 | 5 | 4 | 3 | 33 |
| C-Student 5 | 9 | 11 | 8 | 3 | 3 | 7 | 41 |
| C-Student 6 | 9 | 10 | 6 | 8 | 8 | 9 | 50 |
| C-Student 7 | 6 | 5 | 3 | 3 | 1 | 3 | 21 |
| C-Student 8 | 9 | 9 | 10 | 5 | 4 | 7 | 44 |
| C-Student 9 | 7 | 4 | 3 | 3 | 2 | 6 | 25 |
| C-Student 10 | 6 | 11 | 11 | 10 | 4 | 6 | 48 |
| C-Student 11 | 9 | 7 | 6 | 12 | 0 | 6 | 40 |
| C-Student 12 | 9 | 9 | 10 | 5 | 4 | 7 | 44 |
| C-Student 13 | 10 | 6 | 3 | 4 | 1 | 9 | 33 |
| C-Student | 5 | 0 | 3 | 6 | 0 | 0 | 14 |

| | | | | | | | |
|---------------------|----|----|---|---|---|---|-----------|
| 14 | | | | | | | |
| C- Student 15 | 7 | 6 | 4 | 0 | 2 | 2 | 21 |
| C- Student 16 | 4 | 6 | 2 | 2 | 3 | 4 | 21 |
| C- Student 17 | 7 | 12 | 9 | 7 | 5 | 8 | 48 |
| C- Student 18 | 10 | 11 | 4 | 4 | 6 | 7 | 42 |
| C- Student 19 | 7 | 12 | 9 | 7 | 5 | 8 | 48 |
| C- Student 20 | 6 | 6 | 6 | 3 | 0 | 4 | 25 |
| C- Student 21 | 6 | 3 | 4 | 3 | 0 | 3 | 19 |
| C- Student 22 | 5 | 5 | 3 | 1 | 0 | 4 | 18 |
| C- Student 23 | 8 | 6 | 2 | 4 | 0 | 3 | 23 |
| C- Student 24 | 6 | 4 | 4 | 6 | 2 | 4 | 26 |
| C- Student 25 | 8 | 6 | 2 | 4 | 0 | 3 | 23 |
| C- Student 26 | 6 | 8 | 6 | 5 | 3 | 8 | 36 |
| C- Student 27 | 4 | 8 | 4 | 0 | 2 | 1 | 19 |
| C- Student 28 | 9 | 12 | 6 | 9 | 8 | 8 | 52 |
| C- Student 29 | 8 | 6 | 4 | 5 | 0 | 2 | 25 |
| C- Student 30 | 4 | 8 | 4 | 0 | 2 | 1 | 19 |
| C- Student 31 | 6 | 8 | 3 | 3 | 0 | 5 | 25 |
| C- Student 32 | 8 | 5 | 4 | 4 | 1 | 3 | 25 |
| C- | 8 | 6 | 4 | 5 | 0 | 2 | 25 |

| | | | | | | | |
|--------------|----|----|----|----|---|----|-----------|
| Student 33 | | | | | | | |
| C-Student 34 | 11 | 12 | 16 | 20 | 9 | 12 | 80 |
| C-Student 35 | 4 | 5 | 3 | 2 | 3 | 2 | 19 |

| Group – English Phrase Reading (SCAS – Post Scores) | | | | | | | |
|--|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| EPR-Student 1 | 9 | 9 | 4 | 6 | 3 | 4 | 35 |
| EPR-Student 2 | 7 | 7 | 6 | 9 | 5 | 6 | 40 |
| EPR-Student 3 | 7 | 7 | 5 | 0 | 2 | 4 | 25 |
| EPR-Student 4 | 8 | 8 | 9 | 10 | 6 | 4 | 45 |
| EPR-Student 5 | 7 | 7 | 6 | 9 | 5 | 6 | 40 |
| EPR-Student 6 | 8 | 5 | 4 | 4 | 3 | 4 | 28 |
| EPR-Student 7 | 8 | 3 | 8 | 13 | 3 | 4 | 39 |
| EPR-Student 8 | 11 | 13 | 7 | 8 | 7 | 8 | 54 |
| EPR-Student 9 | 12 | 7 | 2 | 5 | 1 | 1 | 28 |
| EPR-Student 10 | 9 | 9 | 4 | 6 | 3 | 4 | 35 |
| EPR-Student 11 | 11 | 10 | 8 | 10 | 9 | 13 | 61 |
| EPR-Student 12 | 5 | 10 | 4 | 6 | 3 | 7 | 35 |
| EPR-Student 13 | 6 | 11 | 1 | 8 | 1 | 4 | 31 |
| EPR-Student 14 | 6 | 7 | 4 | 10 | 5 | 7 | 39 |

| | | | | | | | |
|----------------|----|----|----|----|----|----|-----------|
| EPR-Student 15 | 3 | 8 | 3 | 5 | 4 | 6 | 29 |
| EPR-Student 16 | 7 | 4 | 3 | 2 | 1 | 3 | 20 |
| EPR-Student 17 | 3 | 4 | 1 | 1 | 0 | 6 | 15 |
| EPR-Student 18 | 10 | 10 | 7 | 9 | 4 | 6 | 46 |
| EPR-Student 19 | 5 | 10 | 10 | 7 | 1 | 6 | 39 |
| EPR-Student 20 | 4 | 7 | 10 | 10 | 4 | 5 | 40 |
| EPR-Student 21 | 8 | 10 | 7 | 13 | 6 | 7 | 51 |
| EPR-Student 22 | 6 | 6 | 6 | 4 | 1 | 2 | 25 |
| EPR-Student 23 | 7 | 9 | 5 | 3 | 3 | 7 | 34 |
| EPR-Student 24 | 11 | 9 | 8 | 11 | 5 | 9 | 53 |
| EPR-Student 25 | 7 | 8 | 6 | 8 | 5 | 10 | 44 |
| EPR-Student 26 | 11 | 13 | 7 | 14 | 4 | 8 | 57 |
| EPR-Student 27 | 10 | 12 | 9 | 13 | 10 | 7 | 61 |
| EPR-Student 28 | 7 | 3 | 3 | 3 | 3 | 6 | 25 |
| EPR-Student 29 | 11 | 14 | 7 | 10 | 6 | 8 | 56 |
| EPR-Student 30 | 6 | 9 | 3 | 3 | 1 | 6 | 28 |

| Group – Humming (SCAS – Post Scores) | | | | | | | |
|---|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| H-Student 1 | 14 | 6 | 10 | 15 | 10 | 10 | 65 |
| H-Student 2 | 7 | 6 | 5 | 7 | 4 | 7 | 36 |
| H-Student 3 | 6 | 9 | 4 | 1 | 0 | 4 | 24 |
| H-Student 4 | 3 | 4 | 1 | 1 | 0 | 6 | 15 |
| H-Student 5 | 8 | 6 | 2 | 6 | 6 | 6 | 34 |
| H-Student 6 | 5 | 14 | 0 | 8 | 1 | 3 | 31 |
| H-Student 7 | 6 | 3 | 3 | 6 | 4 | 3 | 25 |
| H-Student 8 | 9 | 12 | 8 | 9 | 10 | 11 | 59 |
| H-Student 9 | 9 | 9 | 1 | 4 | 3 | 8 | 34 |
| H-Student 10 | 11 | 9 | 11 | 14 | 9 | 5 | 59 |
| H-Student 11 | 8 | 7 | 3 | 3 | 4 | 6 | 31 |
| H-Student 12 | 6 | 6 | 7 | 7 | 4 | 8 | 38 |
| H-Student 13 | 6 | 6 | 5 | 7 | 5 | 5 | 34 |
| H-Student 14 | 10 | 10 | 6 | 9 | 5 | 4 | 44 |
| H-Student 15 | 4 | 9 | 2 | 1 | 0 | 3 | 19 |
| H-Student 16 | 8 | 12 | 1 | 6 | 1 | 7 | 35 |
| H-Student 17 | 5 | 7 | 9 | 11 | 3 | 4 | 39 |
| H-Student | 3 | 4 | 1 | 1 | 0 | 6 | 15 |

| | | | | | | | |
|--------------|----|----|----|----|----|----|-----------|
| 18 | | | | | | | |
| H-Student 19 | 8 | 9 | 3 | 12 | 4 | 4 | 40 |
| H-Student 20 | 8 | 6 | 3 | 4 | 2 | 6 | 29 |
| H-Student 21 | 16 | 17 | 5 | 7 | 9 | 13 | 67 |
| H-Student 22 | 11 | 12 | 7 | 15 | 8 | 6 | 59 |
| H-Student 23 | 6 | 6 | 9 | 13 | 6 | 4 | 44 |
| H-Student 24 | 4 | 10 | 1 | 3 | 1 | 3 | 22 |
| H-Student 25 | 6 | 10 | 3 | 5 | 8 | 5 | 37 |
| H-Student 26 | 12 | 8 | 9 | 13 | 12 | 10 | 64 |
| H-Student 27 | 6 | 9 | 2 | 4 | 1 | 5 | 27 |
| H-Student 28 | 6 | 6 | 3 | 3 | 2 | 2 | 22 |
| H-Student 29 | 7 | 7 | 3 | 4 | 1 | 4 | 26 |
| H-Student 30 | 4 | 11 | 4 | 9 | 8 | 7 | 43 |
| H-Student 31 | 6 | 10 | 7 | 5 | 4 | 9 | 41 |
| H-Student 32 | 6 | 7 | 7 | 0 | 4 | 6 | 30 |
| H-Student 33 | 7 | 5 | 2 | 1 | 0 | 4 | 19 |
| H-Student 34 | 5 | 9 | 3 | 3 | 2 | 7 | 29 |
| H-Student 35 | 10 | 8 | 10 | 14 | 3 | 7 | 52 |

| Group – Silent Sitting (SCAS – Post Scores) | | | | | | | |
|--|----------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|---------------------------|--------------------|
| Student Name | SA(5,8,11,14,15,38) | SP(6,7,9,10,26,31) | OCD(13,17,24,35,36,37) | PD(12,19,25,27,28,30,32,33,34) | PIF(2,16,21,23,29) | GA(1,3,4,18,20,22) | Total Score |
| SS-Student 1 | 5 | 8 | 3 | 1 | 2 | 2 | 21 |
| SS-Student 2 | 8 | 10 | 8 | 5 | 7 | 8 | 46 |
| SS-Student 3 | 6 | 10 | 8 | 10 | 3 | 4 | 41 |
| SS-Student 4 | 4 | 4 | 0 | 0 | 0 | 1 | 9 |
| SS-Student 5 | 8 | 8 | 4 | 6 | 1 | 4 | 31 |
| SS-Student 6 | 10 | 9 | 6 | 3 | 4 | 11 | 43 |
| SS-Student 7 | 9 | 6 | 4 | 2 | 2 | 3 | 26 |
| SS-Student 8 | 6 | 4 | 8 | 3 | 1 | 2 | 24 |
| SS-Student 9 | 5 | 6 | 2 | 2 | 1 | 4 | 20 |
| SS-Student 10 | 2 | 4 | 3 | 4 | 3 | 3 | 19 |
| SS-Student 11 | 11 | 6 | 4 | 4 | 3 | 6 | 34 |
| SS-Student 12 | 11 | 10 | 14 | 17 | 9 | 12 | 73 |
| SS-Student 13 | 3 | 4 | 9 | 13 | 1 | 0 | 30 |
| SS-Student 14 | 5 | 6 | 2 | 2 | 1 | 5 | 21 |
| SS-Student 15 | 11 | 6 | 4 | 8 | 4 | 7 | 40 |
| SS-Student 16 | 6 | 11 | 5 | 14 | 6 | 14 | 56 |

| | | | | | | | |
|-----------------------|----|----|----|----|----|----|-----------|
| SS- Studen t 17 | 7 | 11 | 7 | 12 | 3 | 9 | 49 |
| SS- Studen t 18 | 6 | 9 | 3 | 3 | 4 | 5 | 30 |
| SS- Studen t 19 | 9 | 11 | 5 | 6 | 6 | 6 | 43 |
| SS- Studen t 20 | 10 | 12 | 9 | 11 | 8 | 8 | 58 |
| SS- Studen t 21 | 6 | 5 | 13 | 14 | 8 | 12 | 58 |
| SS- Studen t 22 | 5 | 5 | 6 | 3 | 3 | 3 | 25 |
| SS- Studen t 23 | 6 | 9 | 4 | 3 | 2 | 6 | 30 |
| SS- Studen t 24 | 1 | 7 | 2 | 8 | 3 | 8 | 29 |
| SS- Studen t 25 | 7 | 1 | 0 | 6 | 14 | 5 | 6 |
| SS- Studen t 26 | 7 | 8 | 3 | 2 | 0 | 0 | 20 |
| SS- Studen t 27 | 6 | 9 | 5 | 7 | 4 | 11 | 42 |
| SS- Studen t 28 | 5 | 8 | 2 | 2 | 5 | 5 | 27 |
| SS- Studen t 29 | 6 | 4 | 6 | 9 | 9 | 9 | 43 |
| SS- Studen t 30 | 8 | 7 | 7 | 4 | 2 | 8 | 36 |
| SS- Studen t 31 | 11 | 12 | 11 | 13 | 9 | 11 | 67 |
| SS- Studen t 32 | 6 | 3 | 1 | 5 | 5 | 4 | 24 |
| SS- Studen t 33 | 3 | 3 | 13 | 2 | 3 | 8 | 32 |

| | | | | | | | |
|------------------------|----|----|----|---|---|---|-----------|
| SS- Student t 34 | 3 | 5 | 1 | 3 | 0 | 5 | 17 |
| SS- Student t 35 | 14 | 7 | 14 | 9 | 8 | 4 | 56 |
| SS- Student t 36 | 12 | 8 | 7 | 9 | 4 | 6 | 46 |
| SS- Student t 37 | 8 | 12 | 6 | 3 | 5 | 8 | 42 |
| SS- Student t 38 | 10 | 8 | 10 | 8 | 9 | 8 | 53 |

Mindfulness Attention Awareness Scale for Children:

| Group – Chanting | | |
|------------------|----------------|-----------------|
| Student Name | MAAS – C (Pre) | MAAS – C (Post) |
| C- Student 1 | 3 | 4.13 |
| C- Student 2 | 3.4 | 3.66 |
| C- Student 3 | 3.73 | 4 |
| C- Student 4 | 4.86 | 4.86 |
| C- Student 5 | 3.8 | 5.4 |
| C- Student 6 | 4.2 | 3.93 |
| C- Student 7 | 5.4 | 5.66 |
| C- Student 8 | 2.73 | 1.66 |
| C- Student 9 | 4.86 | 4.86 |
| C- Student 10 | 3.28 | 2.26 |
| C- Student 11 | 4 | 4.13 |
| C- Student 12 | 3.8 | 3.73 |
| C- Student 13 | 5.33 | 5.13 |
| C- Student 14 | 2.4 | 4.66 |
| C- Student 15 | 3.85 | 5.13 |
| C- Student 16 | 5.06 | 5.33 |
| C- Student 17 | 2.73 | 2.93 |
| C- Student 18 | 3.46 | 3.93 |
| C- Student 19 | 3 | 3.73 |
| C- Student 20 | 5.2 | 4.93 |
| C- Student 21 | 5.53 | 5.125 |
| C- Student 22 | 4.93 | 5.73 |
| C- Student 23 | 4.8 | 5.2 |
| C- Student 24 | 2.6 | 4 |

| | | |
|---------------|------|-------|
| C- Student 25 | 2.66 | 3.73 |
| C- Student 26 | 4.93 | 4.86 |
| C- Student 27 | 5.06 | 5.6 |
| C- Student 28 | 4.4 | 3.625 |
| C- Student 29 | 2.66 | 2.93 |
| C- Student 30 | 4.4 | 4.13 |
| C- Student 31 | 3.6 | 5.6 |
| C- Student 32 | 2.53 | 3.73 |
| C- Student 33 | 5.33 | 4.18 |
| C- Student 34 | 3.66 | 3.26 |
| C- Student 35 | 5 | 5.66 |

| Group – English Phrase Reading | | |
|--------------------------------|----------------|-----------------|
| Student Name | MAAS – C (Pre) | MAAS – C (Post) |
| EPR- Student 1 | 4.33 | 3.86 |
| EPR- Student 2 | 2.8 | 3.66 |
| EPR- Student 3 | 4.26 | 3.66 |
| EPR- Student 4 | 3.86 | 4.8 |
| EPR- Student 5 | 3.46 | 4.73 |
| EPR- Student 6 | 4.6 | 4.46 |
| EPR- Student 7 | 2.86 | 3.86 |
| EPR- Student 8 | 3.13 | 3.73 |
| EPR- Student 9 | 3.13 | 4.06 |
| EPR- Student 10 | 5.46 | 5.46 |
| EPR- Student 11 | 3.4 | 3.26 |
| EPR- Student 12 | 3.56 | 4.13 |
| EPR- Student 13 | 2.26 | 3.86 |
| EPR- Student 14 | 2.66 | 3.73 |
| EPR- Student 15 | 4.33 | 4.66 |
| EPR- Student 16 | 3.26 | 4.33 |
| EPR- Student 17 | 4.06 | 5.33 |
| EPR- Student 18 | 4.46 | 4.81 |
| EPR- Student 19 | 3.46 | 3.6 |
| EPR- Student 20 | 2.26 | 4.66 |
| EPR- Student 21 | 2.2 | 2.8 |
| EPR- Student 22 | 4.93 | 5.33 |
| EPR- Student 23 | 4.86 | 3.73 |
| EPR- Student 24 | 4.46 | 4.06 |
| EPR- Student 25 | 4.06 | 3.53 |
| EPR- Student 26 | 3.06 | 4.26 |
| EPR- Student 27 | 4.06 | 5 |
| EPR- Student 28 | 4.88 | 5.26 |

| | | |
|-----------------|------|------|
| EPR- Student 29 | 4.4 | 4.53 |
| EPR- Student 30 | 4.46 | 4.66 |

| Group – Humming | | |
|-----------------|----------------|-----------------|
| Student Name | MAAS – C (Pre) | MAAS – C (Post) |
| H- Student 1 | 3.26 | 3.46 |
| H- Student 2 | 4.33 | 4.46 |
| H- Student 3 | 3.46 | 4.5 |
| H- Student 4 | 5.4 | 5.73 |
| H- Student 5 | 3.66 | 3.8 |
| H- Student 6 | 2.86 | 4.26 |
| H- Student 7 | 4 | 3.73 |
| H- Student 8 | 1.86 | 3.6 |
| H- Student 9 | 4.26 | 3.8 |
| H- Student 10 | 4.13 | 3.13 |
| H- Student 11 | 4.06 | 5.13 |
| H- Student 12 | 3.73 | 3.26 |
| H- Student 13 | 4.42 | 5.46 |
| H- Student 14 | 3.73 | 4.46 |
| H- Student 15 | 4.53 | 5.73 |
| H- Student 16 | 4 | 4.46 |
| H- Student 17 | 3.66 | 3.93 |
| H- Student 18 | 3.8 | 4.46 |
| H- Student 19 | 3.93 | 4 |
| H- Student 20 | 4.6 | 5 |
| H- Student 21 | 4.33 | 4.86 |
| H- Student 22 | 3.13 | 4.06 |
| H- Student 23 | 3.66 | 4.93 |
| H- Student 24 | 4.66 | 4.53 |
| H- Student 25 | 2.625 | 3 |
| H- Student 26 | 2.66 | 2.06 |
| H- Student 27 | 4.26 | 4.8 |
| H- Student 28 | 3.8 | 4.13 |
| H- Student 29 | 4.73 | 5.13 |
| H- Student 30 | 3.33 | 3.6 |
| H- Student 31 | 4.33 | 2.8 |
| H- Student 32 | 4.26 | 4.46 |
| H- Student 33 | 3.13 | 5.6 |
| H- Student 34 | 4.06 | 3.46 |
| H- Student 35 | 4.86 | 4.86 |

| Group – Silent Sitting | | |
|------------------------|----------------|-----------------|
| Student Name | MAAS – C (Pre) | MAAS - C (Post) |
| SS- Student 1 | 5.46 | 5.86 |
| SS- Student 2 | 4.26 | 4.86 |
| SS- Student 3 | 4 | 4.8 |
| SS- Student 4 | 3.8 | 5 |
| SS- Student 5 | 3.53 | 3.06 |
| SS- Student 6 | 3.33 | 4.66 |
| SS- Student 7 | 3.33 | 5 |
| SS- Student 8 | 3.8 | 3.73 |
| SS- Student 9 | 4.86 | 5.73 |
| SS- Student 10 | 4.33 | 5.53 |
| SS- Student 11 | 3.86 | 4.46 |
| SS- Student 12 | 3.08 | 2.6 |
| SS- Student 13 | 3.73 | 3.4 |
| SS- Student 14 | 3.33 | 4.46 |
| SS- Student 15 | 5.33 | 5.53 |
| SS- Student 16 | 2.86 | 4.2 |
| SS- Student 17 | 3.2 | 3.86 |
| SS- Student 18 | 4.4 | 4.6 |
| SS- Student 19 | 4.13 | 5.13 |
| SS- Student 20 | 3.2 | 4.06 |
| SS- Student 21 | 2.2 | 3 |
| SS- Student 22 | 2.53 | 4.73 |
| SS- Student 23 | 3.73 | 3.8 |
| SS- Student 24 | 2.93 | 3.4 |
| SS- Student 25 | 3.46 | 3.46 |
| SS- Student 26 | 4 | 5.6 |
| SS- Student 27 | 3.73 | 3.86 |
| SS- Student 28 | 4.53 | 4.73 |
| SS- Student 29 | 3.4 | 4.2 |
| SS- Student 30 | 3.53 | 4.53 |
| SS- Student 31 | 3.8 | 2.8 |
| SS- Student 32 | 4.8 | 5.33 |
| SS- Student 33 | 3.86 | 3.86 |
| SS- Student 34 | 3.73 | 5.06 |
| SS- Student 35 | 3.53 | 4.26 |
| SS- Student 36 | 3.93 | 4.2 |
| SS- Student 37 | 3.46 | 4.33 |
| SS- Student 38 | 2.93 | 3.6 |

Positive and Negative Affect Scale for Children:

| Group - Chanting | | | | |
|------------------|---------------|-----|-----------------|-----|
| Student Name | PANAS-C (PRE) | | PANAS -C (POST) | |
| | +Ve | -Ve | +Ve | -Ve |
| C- Student 1 | 55 | 33 | 58 | 49 |
| C- Student 2 | 47 | 26 | 51 | 30 |
| C- Student 3 | 51 | 27 | 44 | 24 |
| C- Student 4 | 46 | 30 | 45 | 24 |
| C- Student 5 | 45 | 27 | 52 | 19 |
| C- Student 6 | 32 | 25 | 34 | 41 |
| C- Student 7 | 50 | 19 | 55 | 27 |
| C- Student 8 | 49 | 36 | 48 | 32 |
| C- Student 9 | 53 | 38 | 52 | 46 |
| C- Student 10 | 36 | 32 | 32 | 25 |
| C- Student 11 | 49 | 31 | 42 | 48 |
| C- Student 12 | 48 | 24 | 54 | 20 |
| C- Student 13 | 50 | 30 | 57 | 30 |
| C- Student 14 | 52 | 41 | 53 | 26 |
| C- Student 15 | 53 | 29 | 53 | 24 |
| C- Student 16 | 49 | 28 | 49 | 22 |
| C- Student 17 | 56 | 35 | 49 | 47 |
| C- Student 18 | 49 | 38 | 46 | 47 |
| C- Student 19 | 46 | 57 | 42 | 48 |
| C- Student 20 | 49 | 31 | 50 | 25 |
| C- Student 21 | 54 | 22 | 55 | 20 |
| C- Student 22 | 51 | 28 | 53 | 15 |
| C- Student 23 | 53 | 37 | 57 | 23 |
| C- Student 24 | 45 | 32 | 42 | 48 |
| C- Student 25 | 39 | 42 | 46 | 47 |
| C- Student 26 | 48 | 20 | 54 | 20 |
| C- Student 27 | 53 | 25 | 57 | 26 |
| C- Student 28 | 53 | 37 | 52 | 21 |
| C- Student 29 | 49 | 40 | 46 | 47 |
| C- Student 30 | 44 | 28 | 42 | 48 |
| C- Student 31 | 59 | 18 | 58 | 20 |
| C- Student 32 | 46 | 30 | 55 | 20 |
| C- Student 33 | 45 | 30 | 49 | 19 |
| C- Student 34 | 48 | 65 | 46 | 58 |
| C- Student 35 | 51 | 22 | 50 | 19 |

| Group – English Phrase Reading | | | | |
|--------------------------------|---------------|-----|----------------|-----|
| Student Name | PANAS-C (PRE) | | PANAS-C (POST) | |
| | +Ve | -Ve | +Ve | -Ve |
| EPR- Student 1 | 47 | 38 | 38 | 29 |
| EPR- Student 2 | 31 | 56 | 29 | 48 |
| EPR- Student 3 | 49 | 26 | 40 | 30 |
| EPR- Student 4 | 37 | 38 | 48 | 36 |
| EPR- Student 5 | 48 | 42 | 45 | 50 |
| EPR- Student 6 | 48 | 34 | 46 | 27 |
| EPR- Student 7 | 51 | 40 | 42 | 36 |
| EPR- Student 8 | 47 | 28 | 29 | 48 |
| EPR- Student 9 | 44 | 43 | 47 | 31 |
| EPR- Student 10 | 61 | 17 | 56 | 28 |
| EPR- Student 11 | 49 | 45 | 46 | 42 |
| EPR- Student 12 | 43 | 22 | 45 | 27 |
| EPR- Student 13 | 53 | 60 | 53 | 51 |
| EPR- Student 14 | 27 | 55 | 33 | 45 |
| EPR- Student 15 | 54 | 42 | 53 | 39 |
| EPR- Student 16 | 49 | 48 | 53 | 30 |
| EPR- Student 17 | 26 | 53 | 40 | 35 |
| EPR- Student 18 | 57 | 16 | 29 | 48 |
| EPR- Student 19 | 40 | 46 | 38 | 29 |
| EPR- Student 20 | 35 | 50 | 27 | 38 |
| EPR- Student 21 | 55 | 26 | 33 | 42 |
| EPR- Student 22 | 32 | 30 | 47 | 24 |
| EPR- Student 23 | 32 | 18 | 38 | 29 |
| EPR- Student 24 | 48 | 28 | 36 | 49 |
| EPR- Student 25 | 43 | 32 | 39 | 29 |
| EPR- Student 26 | 48 | 48 | 46 | 45 |
| EPR- Student 27 | 57 | 33 | 55 | 43 |
| EPR- Student 28 | 51 | 16 | 51 | 18 |
| EPR- Student 29 | 55 | 27 | 45 | 30 |
| EPR- Student 30 | 40 | 46 | 48 | 28 |

| Group - Humming | | | | |
|-----------------|---------------|-----|----------------|-----|
| Student Name | PANAS-C (PRE) | | PANAS-C (POST) | |
| | +Ve | -Ve | +Ve | -Ve |
| H- Student 1 | 50 | 32 | 43 | 33 |
| H- Student 2 | 32 | 33 | 30 | 32 |
| H- Student 3 | 59 | 42 | 60 | 29 |
| H- Student 4 | 58 | 21 | 59 | 26 |
| H- Student 5 | 50 | 56 | 51 | 49 |
| H- Student 6 | 44 | 27 | 54 | 25 |

| | | | | |
|---------------|----|----|----|----|
| H- Student 7 | 54 | 21 | 29 | 48 |
| H- Student 8 | 17 | 37 | 16 | 55 |
| H- Student 9 | 43 | 26 | 43 | 32 |
| H- Student 10 | 30 | 51 | 28 | 61 |
| H- Student 11 | 50 | 36 | 45 | 35 |
| H- Student 12 | 42 | 44 | 44 | 38 |
| H- Student 13 | 43 | 50 | 47 | 51 |
| H- Student 14 | 45 | 38 | 40 | 36 |
| H- Student 15 | 53 | 15 | 50 | 21 |
| H- Student 16 | 37 | 47 | 48 | 36 |
| H- Student 17 | 0 | 0 | 45 | 53 |
| H- Student 18 | 17 | 45 | 0 | 0 |
| H- Student 19 | 45 | 17 | 60 | 20 |
| H- Student 20 | 48 | 31 | 49 | 34 |
| H- Student 21 | 52 | 51 | 48 | 57 |
| H- Student 22 | 55 | 48 | 49 | 45 |
| H- Student 23 | 55 | 27 | 51 | 28 |
| H- Student 24 | 49 | 36 | 55 | 22 |
| H- Student 25 | 32 | 55 | 26 | 43 |
| H- Student 26 | 49 | 46 | 43 | 45 |
| H- Student 27 | 43 | 28 | 40 | 31 |
| H- Student 28 | 56 | 26 | 48 | 19 |
| H- Student 29 | 54 | 21 | 55 | 20 |
| H- Student 30 | 32 | 47 | 36 | 45 |
| H- Student 31 | 26 | 42 | 41 | 42 |
| H- Student 32 | 54 | 25 | 59 | 26 |
| H- Student 33 | 44 | 39 | 53 | 27 |
| H- Student 34 | 59 | 52 | 56 | 44 |
| H- Student 35 | 46 | 29 | 45 | 20 |

| Student Name | Group – Silent Sitting | | | |
|----------------|------------------------|-----|----------------|-----|
| | PANAS-C (PRE) | | PANAS-C (POST) | |
| | +Ve | -Ve | +Ve | -Ve |
| SS- Student 1 | 37 | 35 | 33 | 41 |
| SS- Student 2 | 36 | 30 | 32 | 19 |
| SS- Student 3 | 46 | 41 | 44 | 29 |
| SS- Student 4 | 45 | 16 | 40 | 15 |
| SS- Student 5 | 51 | 20 | 48 | 32 |
| SS- Student 6 | 24 | 24 | 32 | 37 |
| SS- Student 7 | 58 | 46 | 51 | 23 |
| SS- Student 8 | 28 | 59 | 32 | 51 |
| SS- Student 9 | 46 | 38 | 50 | 36 |
| SS- Student 10 | 49 | 40 | 49 | 34 |

| | | | | |
|----------------|----|----|----|----|
| SS- Student 11 | 52 | 21 | 26 | 33 |
| SS- Student 12 | 56 | 26 | 56 | 39 |
| SS- Student 13 | 48 | 26 | 45 | 19 |
| SS- Student 14 | 50 | 29 | 52 | 27 |
| SS- Student 15 | 42 | 31 | 21 | 56 |
| SS- Student 16 | 53 | 38 | 42 | 30 |
| SS- Student 17 | 49 | 30 | 47 | 33 |
| SS- Student 18 | 54 | 34 | 46 | 29 |
| SS- Student 19 | 35 | 49 | 37 | 40 |
| SS- Student 20 | 48 | 39 | 56 | 43 |
| SS- Student 21 | 46 | 38 | 42 | 34 |
| SS- Student 22 | 45 | 41 | 43 | 40 |
| SS- Student 23 | 55 | 34 | 47 | 29 |
| SS- Student 24 | 36 | 63 | 35 | 46 |
| SS- Student 25 | 52 | 27 | 35 | 34 |
| SS- Student 26 | 33 | 19 | 45 | 30 |
| SS- Student 27 | 37 | 39 | 40 | 37 |
| SS- Student 28 | 35 | 29 | 42 | 30 |
| SS- Student 29 | 48 | 24 | 50 | 30 |
| SS- Student 30 | 58 | 33 | 55 | 35 |
| SS- Student 31 | 55 | 38 | 53 | 41 |
| SS- Student 32 | 32 | 21 | 28 | 35 |
| SS- Student 33 | 41 | 26 | 47 | 35 |
| SS- Student 34 | 49 | 23 | 50 | 33 |
| SS- Student 35 | 50 | 68 | 49 | 49 |
| SS- Student 36 | 40 | 30 | 51 | 27 |
| SS- Student 37 | 37 | 17 | 49 | 22 |
| SS- Student 38 | 50 | 39 | 49 | 44 |

Children’s Self-concept Scale:

| Student name | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| EPR- Student 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| EPR- Student 2 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| EPR- Student 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| EPR- Student 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| EPR- Student 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| EPR- Student 7 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 8 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| EPR- Student 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 11 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| EPR- Student 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| EPR- Student 13 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 14 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
| EPR- Student 15 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 16 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 17 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 18 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| EPR- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 20 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 21 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| EPR- Student 22 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| EPR- Student 23 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| EPR- Student 24 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| EPR- Student 25 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| EPR- Student 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 27 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| EPR- Student 28 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| EPR- Student 29 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| EPR- Student 30 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |

| Student name | Beha | Beh | Beha | Beh | Beh | Beh | Beha | Beh | Beha | Beh | Beh | Beh | Beh | Beha | Beh | |
|-----------------|------|-----|------|-----|-----|-----|------|-----|------|-----|-----|-----|-----|------|-----|---|
| EPR- Student 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| EPR- Student 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| EPR- Student 3 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| EPR- Student 4 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| EPR- Student 5 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| EPR- Student 6 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| EPR- Student 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 8 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| EPR- Student 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 10 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| EPR- Student 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 12 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 13 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 14 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| EPR- Student 15 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| EPR- Student 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 17 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| EPR- Student 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 21 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| EPR- Student 22 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 23 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 24 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| EPR- Student 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 28 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 29 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 30 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |

| Student name | HS | HS | HS | HS | HS | HS | HS | HS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | |
|-----------------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| EPR- Student 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | | |
| EPR- Student 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| EPR- Student 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| EPR- Student 4 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 5 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| EPR- Student 6 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| EPR- Student 7 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| EPR- Student 8 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| EPR- Student 9 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 10 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 11 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| EPR- Student 12 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 13 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 14 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 15 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| EPR- Student 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| EPR- Student 17 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 18 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 19 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 20 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 21 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| EPR- Student 22 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 23 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 24 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| EPR- Student 25 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| EPR- Student 26 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 27 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| EPR- Student 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| EPR- Student 29 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| EPR- Student 30 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |

| Student name | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| EPR- Student 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| EPR- Student 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 3 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| EPR- Student 4 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 5 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| EPR- Student 6 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| EPR- Student 7 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| EPR- Student 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| EPR- Student 10 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 11 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| EPR- Student 12 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 13 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| EPR- Student 14 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| EPR- Student 15 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| EPR- Student 16 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| EPR- Student 17 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| EPR- Student 18 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| EPR- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| EPR- Student 20 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| EPR- Student 21 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| EPR- Student 22 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| EPR- Student 23 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 24 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| EPR- Student 25 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| EPR- Student 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| EPR- Student 27 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| EPR- Student 28 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| EPR- Student 29 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| EPR- Student 30 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |

| Student name | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiety | Anxiet | Anxiety | Anxiety |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|---------|---------|
| C- Student 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| C- Student 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 4 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| C- Student 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 6 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C- Student 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| C- Student 9 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| C- Student 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| C- Student 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 15 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 17 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| C- Student 18 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| C- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 21 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 24 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| C- Student 25 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| C- Student 27 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| C- Student 28 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| C- Student 29 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| C- Student 31 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 32 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| C- Student 33 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| C- Student 34 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| C- Student 35 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Student name | Beh1 | Beh2 | Beh3 | Beh4 | Beh5 | Beh6 | Beh7 | Beh8 | Beh9 | Beh10 | Beh11 | Beh12 | Beh13 | Beh14 | Beh15 | Beh16 |
|--------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| C-Student 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| C-Student 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| C-Student 5 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 6 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| C-Student 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 8 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| C-Student 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 10 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| C-Student 11 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| C-Student 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 14 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| C-Student 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 17 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| C-Student 18 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| C-Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| C-Student 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 21 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 24 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| C-Student 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 26 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 31 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 32 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 33 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 34 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C-Student 35 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |

| Student name | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| C-Student 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| C-Student 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | |
| C-Student 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| C-Student 4 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| C-Student 5 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 6 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C-Student 7 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 8 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| C-Student 9 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| C-Student 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| C-Student 11 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 13 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 14 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 15 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 16 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 17 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| C-Student 18 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| C-Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 20 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| C-Student 21 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| C-Student 22 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| C-Student 23 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 24 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| C-Student 25 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 26 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| C-Student 27 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| C-Student 28 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| C-Student 29 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| C-Student 30 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| C-Student 31 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| C-Student 32 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| C-Student 33 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| C-Student 34 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C-Student 35 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |

| Student name | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet | Anxiet |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| H- Student 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| H- Student 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| H- Student 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| H- Student 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| H- Student 5 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| H- Student 6 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 7 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| H- Student 8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| H- Student 9 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| H- Student 10 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| H- Student 11 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| H- Student 12 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| H- Student 13 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| H- Student 14 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 15 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| H- Student 16 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| H- Student 17 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 18 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| H- Student 19 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 20 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 21 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| H- Student 22 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| H- Student 23 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| H- Student 24 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| H- Student 25 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| H- Student 26 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| H- Student 27 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 28 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| H- Student 29 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 30 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| H- Student 31 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| H- Student 32 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 33 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 34 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| H- Student 35 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |

| Student name | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | Beh: | HS | HS | HS | HS | HS | HS | HS | HS |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|----|----|----|----|----|----|----|
| H- Student 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 5 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| H- Student 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 7 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H- Student 8 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| H- Student 9 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| H- Student 11 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 12 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| H- Student 13 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| H- Student 14 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 16 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 17 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| H- Student 18 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| H- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 21 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 22 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
| H- Student 23 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 24 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 25 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| H- Student 26 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 27 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 28 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 30 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 31 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 32 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 33 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| H- Student 34 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| H- Student 35 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |

| Student name | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | | |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|
| H- Student 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | |
| H- Student 2 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| H- Student 3 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| H- Student 4 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| H- Student 5 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| H- Student 6 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| H- Student 7 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| H- Student 8 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H- Student 9 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| H- Student 10 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| H- Student 11 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H- Student 12 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| H- Student 13 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| H- Student 14 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| H- Student 15 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| H- Student 16 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| H- Student 17 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| H- Student 18 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H- Student 19 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| H- Student 20 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| H- Student 21 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| H- Student 22 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| H- Student 23 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| H- Student 24 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| H- Student 25 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| H- Student 26 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| H- Student 27 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| H- Student 28 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| H- Student 29 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| H- Student 30 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| H- Student 31 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| H- Student 32 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| H- Student 33 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| H- Student 34 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| H- Student 35 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |

| Student name | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety | Anxiety |
|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| SS- Student 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| SS- Student 3 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| SS- Student 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 5 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| SS- Student 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| SS- Student 7 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 8 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| SS- Student 9 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 10 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| SS- Student 11 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 12 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| SS- Student 13 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 15 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| SS- Student 16 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| SS- Student 17 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| SS- Student 18 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 19 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| SS- Student 20 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 21 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| SS- Student 22 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| SS- Student 23 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 24 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| SS- Student 25 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| SS- Student 26 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 27 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| SS- Student 28 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 29 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
| SS- Student 30 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| SS- Student 31 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| SS- Student 32 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| SS- Student 33 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| SS- Student 34 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| SS- Student 35 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| SS- Student 36 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| SS- Student 37 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 38 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |

| Student name | Beh1 | Beh2 | Beh3 | Beh4 | Beh5 | Beh6 | Beh7 | Beh8 | Beh9 | Beh10 | Beh11 | Beh12 | Beh13 | Beh14 | Beh15 | Beh16 | |
|----------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|---|
| SS- Student 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | |
| SS- Student 3 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 5 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 8 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| SS- Student 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 10 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 11 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 12 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| SS- Student 13 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 15 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 16 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| SS- Student 17 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| SS- Student 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 20 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| SS- Student 21 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| SS- Student 22 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 23 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| SS- Student 24 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| SS- Student 25 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 27 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| SS- Student 28 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 29 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| SS- Student 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| SS- Student 31 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SS- Student 32 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 33 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 34 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 35 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| SS- Student 36 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| SS- Student 37 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| SS- Student 38 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |

| Student name | HS | HS | HS | HS | HS | HS | HS | HS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | ISS | | |
|----------------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|
| SS- Student 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | | |
| SS- Student 2 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | |
| SS- Student 3 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | | |
| SS- Student 4 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | |
| SS- Student 5 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| SS- Student 6 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | |
| SS- Student 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | |
| SS- Student 8 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | |
| SS- Student 9 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| SS- Student 10 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | |
| SS- Student 11 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | |
| SS- Student 12 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| SS- Student 13 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | |
| SS- Student 14 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| SS- Student 15 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | |
| SS- Student 16 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| SS- Student 17 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | |
| SS- Student 18 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| SS- Student 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | |
| SS- Student 20 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | |
| SS- Student 21 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | |
| SS- Student 22 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | |
| SS- Student 23 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | |
| SS- Student 24 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | |
| SS- Student 25 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | |
| SS- Student 26 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| SS- Student 27 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | |
| SS- Student 28 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | |
| SS- Student 29 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| SS- Student 30 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| SS- Student 31 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | |
| SS- Student 32 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| SS- Student 33 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| SS- Student 34 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | |
| SS- Student 35 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | |
| SS- Student 36 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| SS- Student 37 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | |
| SS- Student 38 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |

| Student name | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | PAA | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop | Pop |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SS- Student 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| SS- Student 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SS- Student 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| SS- Student 4 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| SS- Student 5 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| SS- Student 6 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| SS- Student 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 8 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| SS- Student 9 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| SS- Student 10 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| SS- Student 11 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| SS- Student 12 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| SS- Student 13 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| SS- Student 14 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| SS- Student 15 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| SS- Student 16 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| SS- Student 17 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| SS- Student 18 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| SS- Student 19 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| SS- Student 20 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| SS- Student 21 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| SS- Student 22 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| SS- Student 23 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| SS- Student 24 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| SS- Student 25 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| SS- Student 26 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 27 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| SS- Student 28 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| SS- Student 29 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| SS- Student 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 31 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 32 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| SS- Student 33 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| SS- Student 34 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| SS- Student 35 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 36 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| SS- Student 37 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| SS- Student 38 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |



Research Article

Effect of Prosody of Rhythmic Yoga-Based Recitation on Positive and Negative Affect among Adolescents: A Four-Armed Comparative Study

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Abstract. *Background:* Adolescence is a critical period of maturation and immense emotional and behavioral changes. Yoga-based rhythmic recitations have been established to improve emotional personality features. *Aim:* The current four-arm comparative study attempted to appreciate the rhythmic recitations/prosody on Emotional personality among adolescents. *Method:* 138 adolescents (age 12.11 ± 0.76 years) satisfying inclusion and exclusion criteria were recruited and randomly allocated into four groups i.e., Humming the recitation following a *Chanda* (HR), Chanting a *mantra* (CM), Reading an English phrase, and Silent sitting, based on sections of their respective grades. Group intervention was done for 5 minutes, 3 times a day, for 30 days. According to their allocated group was provided. Subjects were assessed with positive and negative Affect Schedules (PANAS) at baseline and post-intervention. *Result:* There was no difference in both domains of PANAS in within group analysis. However, the positive affect was statistically significant when compared between the groups ($p > 0.01$). A post-hoc analysis revealed the superiority of the CM and HM groups in positive affect alone when compared with other two groups. *Conclusion:* There was no statistical difference between CM and HM groups in both domains of PANAS. A humming prosody and *mantra* chanting demonstrated a similar effect on the amelioration of a positive Emotional personality among adolescents.

Keywords. Rhythmic recitation, Sanskrit Prosody, Positive and Negative Affect, Emotions, Adolescence, Psychology

Introduction

In Adolescence, a youngster experiences immense physical and social maturity along with the onset of puberty. There are drastic changes in cognitive

processes, psychological processes, and self-identification, causing a sudden rise in stress levels (1-2). There has been an escalation of emotional and

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problems are conflicts with and between parents (3), conflicts at school, fear of rejection (4) leading to anger, anxiety (5), and antisocial behavior (6). Peer-pressure caused by other factors plays a vital role in adolescent delinquencies (7). Higher levels of negative emotion reduce happiness and higher emotional variability, causing emotional disturbances leading to psychological and behavioral problems among adolescence (8). Thus, mindfulness practices are suggested to improve stability to reduce reactivity during stressful situations (9). Stress adversely affects positive thinking leading to several health and wellbeing outcomes. A study shows that simple *maha-mantra* chanting reduces both moderate and severe stress (10). Studies had shown the reduction of stress by chanting or mere listening to chants (11). *Mantra* chanting also enhances clarity of mind and helps elevate general cheerfulness (12). A significant impact of *mantra* chanting in improving performance IQ in children (13) and is suggested to be implemented in school for the overall development of a child (14). The Sanskrit prosodies meters are called *Chandas*. Rhythmic movements of breathing can affect neuro-physiological functioning (15-16). In ancient texts, there are instances mentioned in the history of Indian poetry where the recitation of verses set in specific *Chanda* led to observable healing benefits. Based on the number, arrangements of syllables with pauses, and the number of syllabic instants in verse, *Chandas* are categorized. In classical Sanskrit poetry, there is a wide range of prosodies/*Chandas*. Among these *Chandas*, Totakam (17) is a popular *Chanda* with a simple pattern, hence compatible for children to follow. While there are studies on chanting and its effect, there is hardly any research done on the impact of *Chandas* specifically. The study aimed to evaluate the role of yoga-based recitation/*Chandas* on positive and negative

emotions among school-going children. This study was designed to have four groups to nullify the effect of chanting a verse and language, to distinguish the impact of *Chanda* alone.

Material and Methods

Trial design

The current study was a four-armed parallel-group comparative trial, conducted in a CBSE school in Bangalore Urban, India. The subjects after recruitment were allocated into 4 groups. Humming the prosody i.e., *Chanda* without actual chanting (HC group), Chanting a *mantra* (CM group), reading an English phrase (EP group), and silently sitting (SS group) based on sections of their respective grades in school. The institutional ethical committee at SVYASA Yoga University, Bangalore, Karnataka, India approved the project and written consent was taken from the parents of all participants. The children gave verbal approval after explaining the detailed procedure of the research trial. The training and assessments were carried out during school hours. There was no stratification or blinding done in this study.

Participants

One hundred and forty students of 7th and 8th grade aged between 12 and 13 years (mean age 12.11 ± 0.76 years) from a CBSE school in south India were approached. Information such as the demographic details, like children's health status and development and mother language was collected from the parents and school records. All the students were from middle or high economic backgrounds and were able to understand and write the English language. Children having any kind of learning disability, visual or verbal impairment were excluded from the study. Two students were excluded from the trial for

having learning disabilities and were reported by their parents to the school authorities.

Intervention

The current research trial had four groups; 1) Humming the prosody or rhythmic recitation without actual chanting (HR group), 2) Chanting a *Mantra* (CM group), 3) reading an English phrase (EP group), and 4) silently sitting (SS group). The HC group was oriented into learning the rhythm (by humming) of a Yoga-based recitation called *Totakam*. *Totakam* is Yoga based recitation with a simple pattern and has 12 syllables where every third syllable is elongated. The reason for this intervention group was to nullify the effect of words or the meaning of the verse from chants completely. CM group children were made to learn a Sanskrit verse called *Madhurashtakam*, in *Totakam Chanda*, written by Shri Vallabhacharya. The EP group was taught an English phrase, “*When your happiness is dependent upon what is happening outside of you, constantly you live as a slave to the external situation.*” by Jaggi Vasudev, widely known as Sadhguru and the Silent Sitting Group was requested to sit in silence observing their thoughts with their eyes closed. All the four groups were asked to practice their respective interventions for 5 minutes, 3 times a day, making it a 15 minutes intervention every day. Group-wise training was carried out in separate rooms, provided by the school. Every 10 students had one volunteer teacher to administer and report adherence to their practice. The CM and HR group were trained by the authors who are experts in Chandas and recitation of mantras. The phrasing, smoothness, and pace were closely monitored by the authors. Rhythm is an important part of chanting mantras which is our primary intervention.

Outcome

The Positive and Negative Affect Scale for Children (PANAS-C) was administered before and after the intervention. PANAS-C is a 27-item tool 18 to discern both the positive and negative affect of an individual and is among the most extensively used instruments to measure emotional and affect impairments. Positive affect implies experiencing feelings like happiness, joy, enthusiasm, alertness, etc. while Negative effect is related to experiencing feelings like anger, fear, guilt, etc. 19. PANAS is a highly reliable tool with its alpha reliability ranging from 0.86 to 0.90 for Positive effect and from 0.84 to 0.87 for Negative effect and when moderately intercorrelated $r = -.27$ 20.

Result

All one hundred and thirty-eight subjects recruited completed the study (see Figure 1 for consort diagram). Table 1 represents the baseline characteristics of the subjects. At the time of recruitment, the one-way ANOVA demonstrated no significant difference between all four groups in their age and PANAS domains ($p > 0.05$). No adverse events were reported as expected during the trial.

PANAS

The result across different groups is described in Table 2. The within-group analysis using sample t-test showed no significant changes in both positive and negative affect scores. However, there was a significant difference in positive affect scores ($p = 0.01$) between groups ($p = 0.38$). Later a posthoc analysis was carried out to appreciate the superiority, which revealed that the HR group had a distinct higher positive affect when compared to the EP reading and SS groups. There was no significant difference between HR and CM recitation without the verse.

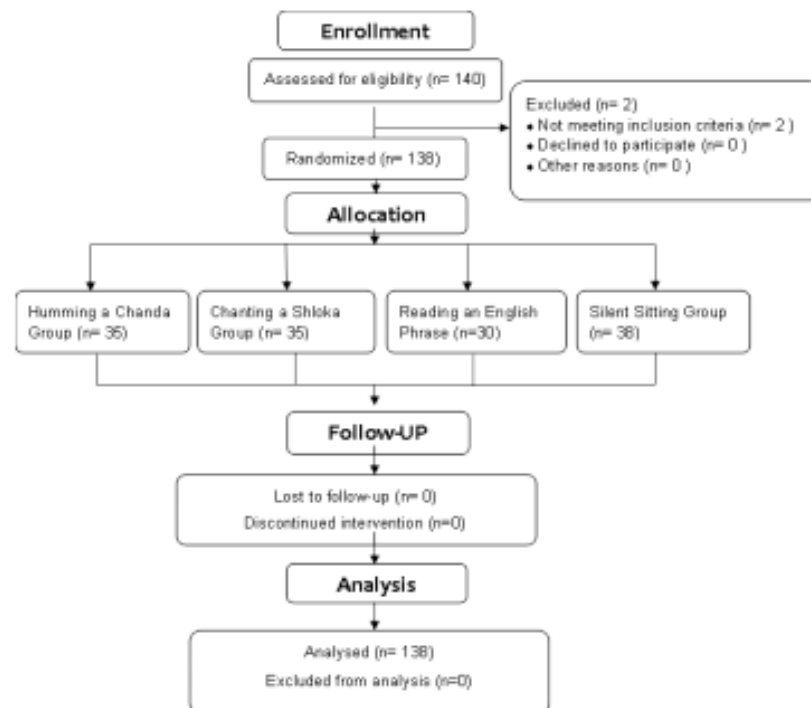


Figure 1. Flow chart of Study design

| | Total (n=138) | Humming a Chanda (n=35) | Chanting a Shloka (n=35) | Reading an English Phrase (n=30) | Silent Sitting (n=38) | P – value+ |
|------------------------------------|------------------|-------------------------------|--------------------------------|--|--------------------------|---------------|
| Age (years in mean±SD) | 12.11±0.76 | 12.08±0.701 | 12.17±0.706 | 12.13±0.819 | 12.05±0.803 | |
| Gender - Male (%) | 70 (50.83%) | 21 (60%) | 14 (40%) | 12 (40%) | 23 (60.53%) | NA |
| Gender - Female (%) | 68 (49.17%) | 14 (40%) | 21 (60%) | 18 (60%) | 15 (40.47%) | |
| PANAS Positive Affect (mean±SD) | 45.57±9.65 | 43.51±13.34 | 48.65±5.35 | 45.23±9.27 | 44.89±8.60 | 0.14+ |
| PANAS Negative Affect (mean±SD) | 34.33±11.89 | 35.45±13.04 | 31.80±9.60 | 36.76±12.69 | 33.71±11.97 | 0.35+ |

Table 1. Baseline Characteristics of Subjects. PANAS- Positive and Negative Affect Scale. Notes: Data were presented as n (%) or mean standard deviation. +One way ANOVA was done to the PANAS-C components at baseline for normality.

| Outcome | Stage | Humming (35) | % change | Chanting (n=35) | % change | English Phrase Reading (n= 30) | % change | Silent Sitting (n= 38) | % change | p-value | p-value (adjusted for baseline) |
|----------|---------|--------------|----------|-----------------|----------|--------------------------------|----------|------------------------|----------|---------|---------------------------------|
| POSITIVE | Pre | 43.51±13.34 | 1.52% | 48.65±5.35 | 1.40% | 45.23±9.27 | -6.00% | 44.89±8.60 | -3.30% | 0.14 | 0.004a,c |
| | Post | 44.17±12.83 | | 49.37±6.36 | | 42.50±8.29 | | 43.39±8.71 | | | |
| | MD | -0.65±11.00 | | -0.71±4.23 | | 2.73±9.65 | | 1.50±8.10 | | | |
| | p-value | 0.72 | | 0.32 | | 0.13 | | 0.26 | | | |
| NEGATIVE | Pre | 35.45±13.04 | -1.04% | 31.80±9.60 | -0.72% | 36.76±12.69 | -1.70% | 33.71±11.97 | 1.20% | 0.35 | 0.35 |
| | Post | 35.08±13.26 | | 31.57±12.57 | | 36.13±9.10 | | 34.13±8.79 | | | |
| | MD | 0.37±14.57 | | 0.22±10.00 | | 0.63±12.57 | | -0.42±10.10 | | | |
| | p-value | 0.88 | | 0.89 | | 0.78 | | 0.79 | | | |

Table 2. Changes during the study in the evaluated variable (Mean±SD) of the outcome and changes. Table demonstrates the one-way ANOVA between the groups at baseline and post treatment data. Baseline adjusted p value is calculated for those parameters which were not normally distributed at baseline across the groups. a = Chanting Vs English Phrase Reading, b = Chanting Vs Humming, c = Chanting Vs Silent Sitting, d= English Phrase Reading Vs Humming, e = English Phrase Reading Vs Silent Sitting, f = Humming Vs Silent Sitting

Discussion

As per the knowledge of the authors, the current study is the first attempt to explore the effect of prosody/*Chandas* i.e., the rhythm used to chant *mantras*. There are several studies on chanting suggesting they induce a psychotherapeutic effect (21), enhance mood and social cognition (22), memory (23) and improve performance IQ (13). The study recruited subjects in their early adolescence which is 11 to 13 years, it being a critical period of changes in behavior, moods, and relationships causing emotional turbulence (24). We had 4 parallel groups. (1) Humming the prosody without the verse, (2) Chanting a *Mantra* (prosody and verse), (3) reading an English phrase, and (4) silently sitting group to appreciate the effect of only *Chanda*/prosody without verse. The results of our study showed augmentation of Positive emotional personality in adolescence in both *Chanda* Humming (prosody alone, no verse) and Chanting a *Mantra* (prosody with verse) when compared to English phrase and silent sitting groups, which is in line with a study conducted by G. Perry

et al., where positive affect increased more with vocal chanting than silent chanting (22). However, there was no statistical difference discerned between the humming and chanting groups, thus proving that it is the rhythm in which a *mantra* is chanted that has an impact on the spoken verse. Studies undoubtedly show chanting has a positive effect on brain activities (21) but *Chanda* is certainly a subtler way of impacting the mind by regulating feelings and enhancing positive emotions and may also alter the brain activity and autonomic variations as a long term effect, which is yet to be explored. Our results also conveyed that there was no statistical significance in the negative effect parameter of the PANAS scale. There were a couple of limitations to our study. It wasn't a randomized control trial as the school had four sections and did not allow us to shuffle children for randomization and intervention. No objective parameters like EEG or fMRI were taken. This study aimed at establishing the efficacy of the intervention as no preliminary study has been done before *Chandas*. The subjects were not

stratified based on their gender, as females tend to face more negative affect than males, which can also be considered as a limitation to the study. Another study is underway considering existing limitations. There were no dropouts in the study which can be considered as strength. Secondly, a robust research method to explore the components of chanting by having four groups to eliminate the element of language, spoken verse, chanting of *mantra* and the *Chanda*/prosody alone was used in the study. Also, the study had adequate samples to show the improvement in the positive and negative affect in children and differentiation between the groups. More studies are warranted on *Chandas* with robust research methods, and objective tools like fMRI and EEG to further validate the results of the study. This will in turn augment our understanding of *Chandas*/Sanskrit Prosodies and also their potential to enhance mental wellbeing. We also hope that this study further encourages researchers to experiment with *Chandas* on children with special needs and behavioural disorders to have a tool to bridge their emotional and cognitive gaps which will be cost neutral as well as easy to incorporate.

Conclusion

The results of the current comparative study, though preclusive, support our hypothesis suggesting the *mantra* chanting and only humming the prosody without verse had a similar effect on emotional personality features of positive and negative affect. The results also suggest amelioration in the positive affect following chanting and humming the prosody, although there were no changes in the negative effect of PANAS across the groups.

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Conclusion

The results of the current comparative study, though preclusive, support our hypothesis suggesting the *mantra* chanting and only humming the prosody without verse had a similar effect on emotional personality features of positive and negative affect. The results also suggest amelioration in the positive affect following chanting and humming the prosody, although there were no changes in the negative effect of PANAS across the groups.

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ORIGINAL ARTICLE

Impact of Sanskrit prosody on anxiety, mindfulness, and self-concept in young adolescents: A four-armed control trial

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ABSTRACT

Background: Upsurge in anxiety and struggle with self-concept commonly appears during adolescence. Chanting of many forms have been established to improve emotional personality features.

Aim and Objectives: We conducted a four-armed comparative study to explore the capacity of Chanda/prosody to impact anxiety, mindfulness, and self-concept in young adolescents.

Material and Methods: A total of 140 students (12.12 ± 0.74 years) were screened, out of which 138 met the inclusion criteria and were allocated into four groups: humming a Chanda, chanting a Sanskrit verse, reading an English phrase (EP), and silent sitting. Baseline and postintervention data were collected using the Spence Children's Anxiety Scale, Mindfulness Attention Awareness Scale for Children, and Children's Self-Concept Scale.

Result: Our study results reveal that there was a significant reduction in anxiety levels in the humming group and few domains of anxiety in the chanting group as well. The mindfulness scores were significantly improved in all the four groups including the humming and chanting groups after the interventions.

Conclusion: There was no effect on self-concept scores in the humming group whereas the chanting group had a significant improvement in self-concept scale.

Key Words: Adolescence, anxiety, Chanda, mindfulness, Sanskrit prosody, self-concept

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INTRODUCTION

Adolescence is the transition period where a child experiences immense neurodevelopmental changes which then impacts cognitive abilities, emotions, self, and social judgment (Paus, Keshavan, & Giedd, 2008). The maturation of subcortical structures due to hormonal changes in puberty is associated with emotions (Davidson et al., 2002), decision-making, and reward-seeking tendencies (Harden et al., 2018). With the onset

of puberty which is characterized by physical, psychological, and hormonal transformation (Goddings et al., 2014), greater emotional and social involvement takes place (Viner et al., 2012) and a higher sense of reputation damage or enhancement is also prevalent due to peer presence and how it perceives the society. Hence, there is a great amount of difference in the way an adolescent makes his discussions compared to that of an adult (Somerville, 2013). Research shows that onset of varied

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Table 1: Baseline characteristics of subjects

| | Total (n=138) | Chanting | English phrase read | Humming | Silent sitting | p* |
|-----------------------------------|------------------|-------------|------------------------|-------------|-------------------|------|
| Age | 12.11±0.76 | 12.17±0.706 | 12.13±0.819 | 12.08±0.701 | 12.05±0.803 | |
| Gender, n (%) | | | | | | |
| Male | 70 (50.83) | 14 (40) | 12 (40) | 21 (60) | 23 (60.53) | |
| Female | 68 (49.17) | 21 (60) | 18 (60) | 14 (40) | 15 (40.47) | |
| Spence Anxiety Scale for Children | | | | | | |
| SA | 32.56±10.62 | 8.40±2.93 | 8.43±2.89 | 7.97±2.35 | 7.76±2.45 | 0.66 |
| SP | 35.08±10.2 | 8.71±2.28 | 9.10±2.92 | 8.80±2.5 | 8.47±2.50 | 0.79 |
| OCD | 22.85±12.63 | 5.97±3.40 | 6.33±3.52 | 5.11±2.62 | 5.44±3.09 | 0.41 |
| PD | 29.68±15.5 | 7.34±4.53 | 7.70±4.42 | 8.28±3.68 | 6.36±2.87 | 0.18 |
| PIF | 16.79±10.67 | 4.34±2.91 | 4.21±2.74 | 4.22±2.35 | 4.02±2.67 | 0.28 |
| GA | 28.72±11.71 | 7.20±2.84 | 7.43±2.84 | 7.02±2.75 | 7.07±3.28 | 0.94 |
| MAAS-C | 15.37±3.26 | 4.00±0.99 | 3.77±0.87 | 3.87±0.71 | 3.73±0.69 | 0.51 |
| Children's Self-Concept Scale | | | | | | |
| Anxiety | 54.23±13.29 | 14.62±3.63 | 12.1±3.66 | 13.57±3.06 | 13.94±2.94 | 0.71 |
| Behavior | 37.88±10.38 | 9.68±2.24 | 8.86±2.73 | 9.77±2.49 | 9.57±2.92 | 0.50 |
| HS | 23.49±6.6 | 5.74±1.54 | 5.83±1.98 | 6.08±1.50 | 5.84±1.48 | 0.83 |
| ISS | 37.4±10.42 | 9.2±2.36 | 9.83±2.52 | 9.37±2.76 | 9.0±2.78 | 0.61 |
| PAA | 26.75±7.71 | 6.85±2.01 | 6.8±1.98 | 6.68±1.77 | 6.42±1.95 | 0.77 |
| Popularity | 27.95±10.05 | 7.0±2.52 | 6.9±2.36 | 7.0±2.61 | 7.05±2.56 | 0.99 |

Data are presented as n (%) or mean±SD. *One-way ANOVA was done to compare the baseline characteristics between the four groups. SD, Standard deviation; SA, Separation anxiety; SP, Social phobia; OCD, Obsessive-compulsive disorder; PIF, Physical injury fears; PD, Panic disorder; GA, Generalized anxiety; MAAS-C, Mindfulness Attention Awareness Scale for Children; HS, Happiness and satisfaction; ISS, Intellectual and school status; PAA, Physical appearance and attributes

psychological disorders heightens during the period of adolescence (Kessler et al., 2005). Some common comorbidities found in adolescence in the United States as reported by a previous study are internalizing, including fear and distress, and externalizing, including behavior and substance use (Kessler et al., 2014). Anxiety (Weymouth & Buehler, 2016), depression, and substance use are among many common problems in adolescence requiring adaptable strategies (Teesson et al., 2020).

Self-concept is an attribute of an individual which means the perceptions and beliefs of a person related to their feelings, attitude, social acceptance, and skills impacting their behavior making them to accept varied responsibilities in life (Scatolini, Zanni, & Pfeifer, 2017). Piers and Herzberg defined self-concept as "a relatively stable set of attitudes reflecting both description and evaluation of one's own behaviours and attribute" (Piers, Dale, & David, n.d.) and friends play a significant role in the development of self-concept in adolescence (Romund et al., 2017). Studies suggest that there is a vivid connection between emotional intelligence and mindfulness and both can be enhanced with direct classroom intervention in adolescence (Rodriguez-Ledo, Orejudo, Cardoso, Balaguer, & Zarza-Alzugaray, 2018). Mindfulness is basically a quality of consciousness and refers to having absolute awareness of the present moment. It has been proven to be highly useful in regulating emotions, dealing with stress, Psychological Well-being (Brown, Ryan, & Creswell, 2007; Osman, Lamis, Bagge, Freedenthal, & Barnes, 2016), and psychological functioning (Baer, 2003). Moreover, regular practice of mindfulness has shown favorable outcomes in enhancing sustained attention (Schmertz, Anderson, & Robins, 2009) and improved capacity to deal with depression (Fennell, 2004), mood, and anxiety, particularly in adolescents (Schonert-Reichl & Lawlor, 2010). Mindfulness programs have also had

commendable medical outcomes in ability to manage chronic pain (McCracken & Thompson, 2009), fibromyalgia (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007), and cancer-related distress (Carlson & Brown, 2005). It has been seen that increase in negative emotions reduces happiness and higher emotional variability, causing emotional disturbances leading behavioral problems in adolescence (Beauchaine, Gatzke-Kopp, & Mead, 2007), thus mindfulness practices are recommended to improve stability and reduce reactive tendency during stressful situations (Ashe, Newman, & Wilson, 2015).

Various measures such as cognitive-behavior therapy, high intensity intermittent games-based activity, and mindfulness competence development program have been experimented and proved worthy to help an adolescent with anxiety, emotions, mindfulness, improved cognitive abilities, and enhanced self-concept (Cooper et al., 2018; Rodriguez-Ledo et al., 2018; Warwick et al., 2017). Studies also show that yoga can help in enhancing psychological fitness while superbrain yoga has shown positive results in reducing anxiety in adolescence (Choukse, Ram, & Nagendra, 2019; Kumar, Singh, & Prof, 2017). Mantra chanting, a key element of yoga, has also been effective in improving performance IQ (Chamoli et al., 2017), executive function (Pradhan & Derle, 2012), and reading accuracy (Colwell & Murlless, 2002) in children. *Chanda* prosody is an important component of chanting. *Chanda* are pauses and rhythm in Sanskrit poetry and are categorized according to certain rules based on the number and arrangement of syllables, the arrangement of pauses, and the number of syllabic instants in verse. In classical Sanskrit poetry, there is a wide range of prosodies/*Chanda*. Among these *Chanda*, *Totakam* (Mishra, 1999) is a popular *Chanda* with a very simple pattern, hence compatible for children to follow. While there are a lot of studies on the beneficial effects of chanting, there

Table 2: Comparison of baseline scores of Spence Children's Anxiety Scale and Mindfulness Attention Awareness Scale for Children scores with scores at 1 month

| Domains | Chanting | Percentage change | English phrase read | Percentage change | Humming | Percentage change | Silent sitting | Percentage change | P (unadjusted) | P (adjusted for baseline) |
|---------------------------------|------------|-------------------|---------------------|-------------------|------------|-------------------|----------------|-------------------|----------------|---------------------------|
| Spence Children's Anxiety Scale | | | | | | | | | | |
| SA | | | | | | | | | | |
| Pre | 8.40±2.93 | -14.30 | 8.43±2.89 | -9.10 | 7.97±2.35 | -8.30 | 7.76±2.45 | -9.80 | 0.66 | 0.377 |
| Post | 7.20±1.89 | | 7.66±2.45 | | 7.31±2.94 | | 7.00±2.95 | | 0.76 | |
| MD | 1.20±2.78 | | 0.76±2.26 | | 0.65±2.64 | | 0.76±3.13 | | | |
| P | 0.01 | | 0.007 | | 0.15 | | 0.14 | | | |
| SP | | | | | | | | | | |
| Pre | 8.71±2.28 | -15.00 | 9.10±2.92 | -9 | 8.80±2.5 | -6 | 8.47±2.50 | -14.30 | 0.79 | 1.249 |
| Post | 7.40±2.91 | | 8.30±2.84 | | 8.25±2.95 | | 7.26±2.84 | | 0.29 | |
| MD | 1.31±2.74 | | 0.80±3.58 | | 0.54±3.07 | | 1.21±4.26 | | | |
| P | 0.0076 | | 0.23 | | 0.3 | | 0.08 | | | |
| OCD | | | | | | | | | | |
| Pre | 5.97±3.40 | -9.20 | 6.33±3.52 | -12.20 | 5.11±2.62 | -10.60 | 5.44±3.09 | 5.90 | 0.41 | 0.936 |
| Post | 5.42±3.16 | | 5.56±2.52 | | 4.57±3.10 | | 5.76±3.83 | | 0.42 | |
| MD | 0.54±4.25 | | 0.76±3.50 | | 0.54±2.97 | | -0.31±4.99 | | | |
| P | 0.45 | | 0.24 | | 0.28 | | 0.69 | | | |
| PD | | | | | | | | | | |
| Pre | 7.34±4.53 | 0.2916 | 7.70±4.42 | 0.0481 | 8.28±3.68 | 0.2029 | 6.36±2.87 | 0.0236 | 0.18 | 1.486 |
| Post | 5.20±3.98 | | 7.33±3.79 | | 6.60±4.49 | | 6.21±4.33 | | 0.22 | |
| MD | 2.14±4.05 | | 0.36±3.76 | | 1.68±4.10 | | 0.15±5.01 | | | |
| P | 0.0036 | | 0.59 | | 0.02 | | 0.84 | | | |
| PIF | | | | | | | | | | |
| Pre | 4.34±2.91 | -38.90 | 4.21±2.74 | -9.70 | 4.22±2.35 | -2.60 | 4.02±2.67 | 6.00 | 0.28 | 2.124 |
| Post | 2.65±2.73 | | 3.80±2.39 | | 4.11±3.35 | | 4.26±3.21 | | 0.1 | |
| MD | 1.68±2.32 | | 1.40±0.60 | | 0.11±2.47 | | -0.23±4.25 | | | |
| P | 0.0001 | | 0.02 | | 0.78 | | 0.72 | | | |
| GA | | | | | | | | | | |
| Pre | 7.20±2.84 | -32.20 | 7.43±2.84 | -20.20 | 7.02±2.75 | -15.40 | 7.07±3.28 | -12.40 | 0.94 | 1.471 |
| Post | 4.88±2.77 | | 5.93±2.42 | | 5.94±2.49 | | 6.19±3.43 | | 0.22 | |
| MD | 2.31±3.25 | | 1.50±3.36 | | 1.08±3.00 | | 0.89±4.44 | | | |
| P | 0.0002 | | 0.02 | | 0.03 | | 0.22 | | | |
| MAAS-C | | | | | | | | | | |
| Pre | 4.00±0.99 | | 3.77±0.87 | 13 | 3.87±0.71 | 9.80 | 3.73±0.69 | 16.60 | 0.51 | 0.117 |
| Post | 0.32±1.00 | | 4.26±0.66 | | 4.25±0.86 | | 4.35±0.84 | | 0.95 | |
| MD | -0.32±0.82 | | -0.49±0.74 | | -4.37±0.77 | | -0.61±0.65 | | | |
| P | 0.02 | | 0.0011 | | 0.0075 | | <0.0001 | | | |

SA, Separation anxiety; SP, Social phobia; OCD, Obsessive-compulsive disorder; PIF, Physical injury fears; PD, Panic disorder; GA, Generalized anxiety; MAAS-C, Mindfulness Attention Awareness Scale for Children

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Table 3: Comparison of baseline self-concept scale score with score at 1 month

| Domain | Chanting (n=35) | | English phrase reading (n=30) | | Humming (n=35) | | Silent sitting (n=38) | | p (b/w group) | F |
|-------------|-----------------|-------------|-------------------------------|------------|----------------|------------|-----------------------|------------|---------------|-------|
| | Pre | Post | Pre | Post | Pre | Post | Pre | Post | | |
| Anxiety | 14.62±3.63 | 17.48±3.81 | 12.1±3.66 | 14.86±3.38 | 13.57±3.06 | 12.97±3.47 | 13.94±2.94 | 13.94±3.03 | <0.01 | 12.87 |
| | | <0.01 | | <0.01 | | 0.25 | | 0.99 | 1,2,3* | |
| Behavior | 9.68±2.24 | 10.88±2.84 | 8.86±2.73 | 9.7±2.56 | 9.77±2.49 | 9.97±2.95 | 9.57±2.92 | 10.05±2.81 | 0.39 | 1.00 |
| | | <0.01 | | 0.28 | | 0.64 | | 0.21 | | |
| HS | 5.74±1.54 | 6.14±1.41 | 5.83±1.98 | 6.13±1.30 | 6.08±1.50 | 5.82±1.88 | 5.84±1.48 | 6.05±1.29 | 0.69 | 0.66 |
| | | 0.08 | | 0.54 | | 0.39 | | 0.24 | | |
| ISS | 9.2±2.36 | 10.65±2.40 | 9.83±2.52 | 10.96±1.93 | 9.37±2.76 | 9.54±2.25 | 9.0±2.78 | 9.21±2.81 | 0.01 | 4.05 |
| | | <0.01 | | 0.11 | | 0.67 | | 0.62 | 5* | |
| PAA | 6.85±2.01 | 7.77±1.64 | 6.8±1.98 | 7.43±1.85 | 6.68±1.77 | 6.34±1.81 | 6.42±1.95 | 6.68±2.13 | <0.01 | 4.55 |
| | | <0.01 | | 0.21 | | 0.25 | | 0.23 | 2* | |
| Popularity | 7.0±2.52 | 8.08±2.58 | 6.9±2.36 | 7.4±2.20 | 7.0±2.61 | 6.74±2.61 | 7.05±2.56 | 6.97±2.52 | 0.05 | 2.66 |
| | | <0.01 | | 0.47 | | 0.51 | | 0.79 | | |
| Total score | 53.11±10.39 | 61.02±11.13 | 50.33±10.37 | 56.5±9.37 | 52.48±9.42 | 51.4±10.63 | 51.84±9.87 | 52.92±9.79 | <0.01 | 7.77 |
| | | <0.01 | | 0.03 | | 0.47 | | 0.33 | 2,3* | |

*A comparison between the groups was conducted as follows: Chanting versus English phrase reading=1, Chanting versus humming=2, Chanting versus silent sitting=3, English phrase reading versus humming=4, English phrase reading versus silent sitting=5, Humming versus silent sitting=6. *Significant difference in the between group analysis is denoted by: HS, Happiness and satisfaction; ISS, Intellectual and school status; PAA, Physical appearance and attributes

is not any study that shows the impact of *Chanda*/prosody element of chanting. Our study is thus aimed at finding out the effect of the prosody element, i.e., the rhythm and pauses in chanting and its impact, with or without the verses on anxiety, cognitive abilities, and mindfulness in young adolescence.

MATERIALS AND METHODS

Trial design

The current study was a comparative four-armed parallel-group trial, conducted in a CBSE school in South Bangalore, India. All subjects, after recruitment were allocated into four groups, i.e., Humming the prosody, i.e., *Chanda* without actual chanting (Humming a *Chanda* [HC] group), Chanting a mantra (CM group), reading an English phrase (EP group), and silently sitting (SS group) according to sections of respective grades in school. The training and the assessments were carried out during school hours. There was no stratification or blinding done in this study. Figure 1 represents the trail profile of the study. The project was approved by the institutional ethical committee and written consent was obtained from the parents of all participants and the children gave a verbal approval after we explained the detailed procedure of the research trial.

Participants

An Indian CBSE school was approached, and 140 students aged between 12 and 13 years (mean age: 12.11 ± 0.76 years) of Grades 7 and 8 were screened for the study. Both boys and girls were considered in the study. Out of these 140 students, 138 were recruited who met the inclusion criteria. Children having any kind of learning disability and visual or verbal impairment were excluded from the study. Hence, two students were excluded from the trial for having learning disabilities as reported by the school authorities, based on the information given by their parents. Information such as the demographic details, such as children's health status and development and mother language, was collected

from the parents and school records. All the students were from middle or high economic backgrounds and were able to understand and write English language.

Intervention

The current research trial had four groups which were (1) humming the prosody or rhythmic recitation without actual chanting (HR group), (2) chanting a *Mantra* (CM group), (3) EP group, and (4) silently sitting (SS group). The HC group was oriented into learning the rhythm of reciting a *Chanda* called *Totakam*. *Totakam* is a yoga-based recitation with a very simple pattern and has 12 syllables where every third syllable is elongated. The reason for this intervention group was to nullify the effect of words or the meaning of verse from chanting, completely. The CM group children were made to learn a Sanskrit verse called *Madhurashatakam*, in *Totakam Chanda*, which was written by Shri *Vallabhacharya*.

The EP group was taught an English phrase, "When your happiness is dependent upon what is happening outside of you, constantly you live as a slave to the external situation" by *Jaggi Vasudev*, widely known as Sadhguru, and the silent sitting (SS) group was requested to sit in silence observing their thoughts with their eyes closed.

All the four groups were asked to practice their respective interventions for 5 min, 3 times a day, making it a 15-min intervention every day. This was done during the school hours once in the beginning of the 1st period, once at noon, and once before home time. Groupwise training was carried out in separate rooms, provided by the school. Every 10 students had one volunteer teacher to administer and report adherence of their practice. The CM and HR groups were trained by the authors who are experts in reciting the yoga recitations. The phrasing, smoothness, and pace were closely monitored by the authors as rhythm is the most important part of rhythmic yoga recitations which is our primary intervention.

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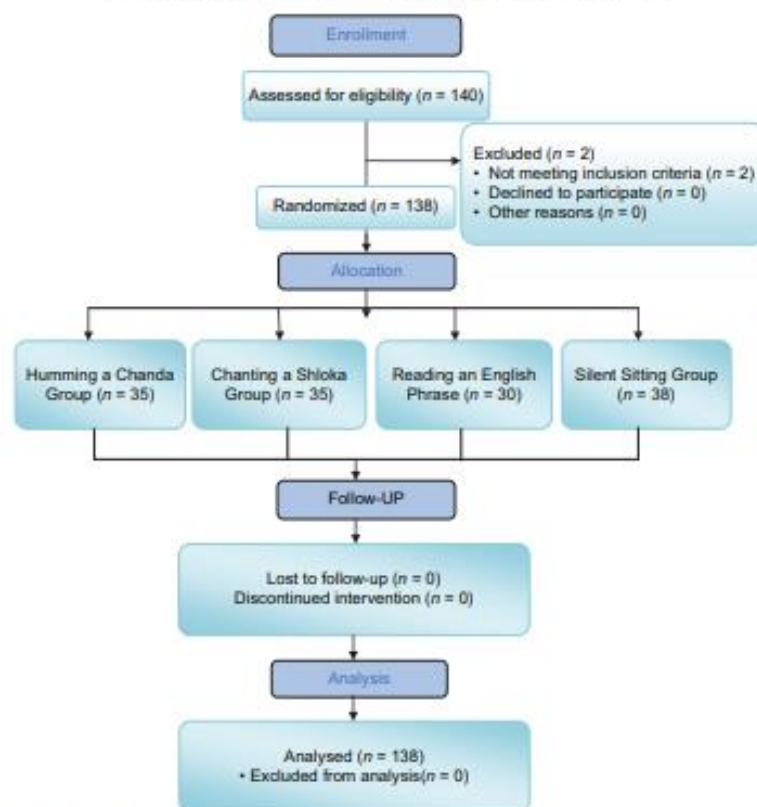


Figure 1: Trial profile of the study

Outcome

Spence Children's Anxiety Scale

Spence Children's Anxiety Scale is a tool to measure anxiety in children. It is a self-measure tool with 44 items out of which 38 items are further categorized into six subscales of specific anxiety such as social phobia, separation anxiety, panic attack/agoraphobia, obsessive-compulsive disorder, generalized anxiety, and physical injury fears and the remaining 8 items are positive fillers. Children are asked to respond with the frequency in which these symptoms occur on a four-point scale ranging from never (scored 0) to always (scored 3). Total score is then calculated by summing up the scales of all 38 anxiety symptom items (Spence, Barrett, & Turner, 2003). It is a highly reliable tool to measure anxiety in school-going adolescence ($\alpha = 0.92$) (Essau, Muris, & Ederer, 2002).

Children's Self-Concept Scale

Self-concept or self-esteem is an important construct of a child's psychology and has been studied by a large number of researchers using standardized tools (Kwan, John, & Thein, 2007). The

Children's Self-Concept Scale was originally proposed by Piers & Harris and it has a multidimensional theory of self-concept which is global feelings and specific feelings: global feelings meaning "how a person feels about himself in general" and specific meaning "how a person feels about himself in a specific area of functioning" (Piers & Harris, 1969). This scale consists of 80 items of self-concept further divided into six subdomains, namely intellectual and academic status (17 items), behavior (16 items), anxiety (14 items), appearance (13 items), popularity (12 items), and satisfaction (10 items) (Yang et al., 2013). Children's Self-Concept Scale is a highly consistent tool with an alpha of 0.91 (Scatolini et al., 2017).

Mindfulness Attention Awareness Scale for Children

The Mindfulness Attention Awareness Scale (MAAS) was originally developed by Brown & Ryan (Brown & Ryan, 2003) and is one of the most popular instruments to measure mindfulness (Ruiz, Suárez-Falcón, & Riaño-Hernández, 2016). A children's version of this scale was later developed and validated in the year 2011, which showed that MAAS for Children Mindful Attention Awareness Scale - Children (MAAS-C) had high internal

consistency (e.g., Cronbach's alpha) and a one-factor solution. The MAAS-Children (MAAS-C), as well as a battery of measures assessing a corpus of dimensions of well-being, includes self-concept, optimism, positive and negative affect, school efficacy, classroom autonomy and supportiveness, depression, and anxiety (Lawlor et al., 2014).

RESULTS

Demographic details of the participants are presented in Table 1. There were no significant changes in the domains of the Spence Children's Anxiety Scale for children when compared between groups. However, there was a significant difference in the domains of SA, SP, PD, PIF, and GA in the chanting group and PD and GA in the humming group during within-group analysis ($p < 0.05$). MAAS for children reported no significant difference when compared between groups. However, there was a significant difference in all the groups on within-group analysis. Table 2. represents the results of Spence children's Anxiety scale and MAAS-C. A significant change was noticed in the domains of anxiety, intellectual and school status, physical appearance and attributes, and the total scores of the self-concept scale in all the four groups after the interventions. On pairwise group comparisons, the change in the domain of anxiety was significant for the chanting versus English phrase reading, chanting versus humming, and chanting versus SS ($p < 0.05$). When intellectual and school status for English phrase reading was compared to the SS group, a significant difference was depicted ($p < 0.05$). Furthermore, physical appearance and attributes scores and total scores were found significantly improved for chanting versus humming but only total scores in the humming versus SS groups. There was a significant change in all the domains except happiness and satisfaction after chanting ($p < 0.01$). However, participants in the English phrase reading group also showed a significant increase in the scores of anxiety and total scores of the self-concept scale after intervention ($p < 0.01$ and $p = 0.03$). There was a reduction in the anxiety levels for the humming group whereas increase in all anxiety scores in the remaining three groups. Table 3 represents the result for Children's Self-concept Scale.

DISCUSSION

Adolescence is a sensitive period for emergence of anxiety (Leigh & Clark, 2018). Anxiety and peer relations are major concerns in early adolescence (Erath, Flanagan, & Bierman, 2007). Difficulty in emotional regulation is closely associated to both social and generalized anxieties among adolescents (Mathews, Kerns, & Ciesla, 2014). Self-concept is impacted with transition in middle school children (Onetti, Fernández-García, & Castillo-Rodríguez, 2019). The concept of mindfulness has lately gained a lot of attention due to its capacity to influence self-regulatory processes (Baldus et al., 2018)

Chanting has been used for ages to overcome psychological and emotional disturbances (Perry, Polito, & Thompson, 2021), but the individual component of chanting that is *Chandas* or prosody has

not been studied so far. We attempted to specifically understand the impact of *Chanda* (rhythm or pauses) used in chanting with four groups to eliminate the factors of words, their meanings. In the current study, we evaluated the effect of humming of "Totakam" *Chanda* on anxiety among children aged between 12 and 14 years. There was a significant improvement in self-concept scores in the humming and chanting groups. There was also a significant reduction in anxiety in the chanting group when compared to the other three groups in between-group analysis. There were no changes in the anxiety levels of the children allocated to the humming group, however, the chanting group showed improvement in the Spence Children's Anxiety Scale.

As per our knowledge, this is the first scientific effort made to explore and analyze the impact of *Chandas* on domains such as anxiety, mindfulness, and self-concept. We specifically chose this age group as young adolescence is such a vulnerable age where all sorts of delinquent behavior tend to increase (Moffitt, 1993). Although we managed to get a sample size of 138 students to have a minimum of 30 in each group, we could not randomize them as they were in 4 different sections and moving them for intervention was not allowed by the school management which was one drawback of the study. Furthermore, since the subject was new to the school management and not much work is out there for reference, we got permission to conduct our study only for 30 days which is not sufficient to notice the significance of our intervention. In spite of the above challenges, this study will make a firm base for further research on *Chandas* and its impact in various domains.

CONCLUSION

Humming of Sanskrit prosody has reported an overall reduction in anxiety levels when compared to the remaining three groups. However, there was a decrease in the anxiety levels in the chanting group as well. There was a significant increase in the mindfulness scores in the humming as well as chanting groups. There was no change observed in the self-concept scales in the humming group.

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Conflicts of interest

There are no conflicts of interest.

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SANSKRIT PROSODY: A POTENTIAL TOOL TO IMPACT NEUROPSYCHOLOGICAL VARIABLES IN MIDDLE SCHOOL CHILDREN

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Abstract

Background /Aim:

Psychological changes during transition from primary to middle school are immense, leading to a lack of attention in children. Chanting has been beneficial to improve attention and other cognitive parameters, but the impact of individual elements of chanting is yet to be explored. The current four-armed comparative study was attempted to explore the impact of prosody/*Chanda* on sustained attention and response interference in middle school children.

Methods:

A total of 138 students (12.12 ± 0.74 years) were recruited from grades 7 and 8 of an English medium School and were allocated into four groups; Humming a *Chanda* (HC), Chanting a Sanskrit verse (CS), Reading an English verse (RE) and Silent sitting (SS). Fifteen minutes of the intervention was provided every day, divided into three sessions of 5 minutes each for four weeks. Baseline and post-intervention data were collected using Digit Letter Substitution Test (DLST) and Stroop color-word test.

Results:

The current study had a cent percent adherence to the protocol. Within-group analysis using sample t-test demonstrated significant changes in HC, CS, and SS groups ($p < 0.001$) with DLST scores. Post-hoc analysis revealed that the CS group had higher scores; however, there were no differences between the HC and CS groups. Stroop scores improved in all groups except for the SS group. Post-hoc analysis to examine the superiority between groups presented a higher statistical significance in CS group when compared to HC group. A statistical significance was

also observed between the chanting and SS group. There were statistical differences within the group in both HC and CS groups in the Stroop mistake scores, but no differences were observed between groups.

Conclusion:

Our study results revealed that humming prosody and chanting a mantra have similar effects on sustained attention; however, humming has no effect on response interference among middle school children.

Keywords: Prosody, Chanda, Sanskrit, Rhythmic music, Chanting, Attention, Response Interference

INTRODUCTION

The transition from primary to middle school is quite a vulnerable period, where a child needs extra attention to cope with middle school education (1). Peer pressure (2), behavioral changes (3), academic challenges (4), and even bullying at times take a toll on a child's performance in middle school (5). Cognitive ability is considered to have a maximum contribution in academic performance (4) and along with the onset of puberty at this age comes significant changes in executive functions like attention (6). Chanting of *mantras* has proved to be beneficial in improving Intelligent performance quotient in children (7). Malhotra et al., in their study, showed that listening to *the Gayatri mantra* can reduce reaction time (8), and Pradhan et al. suggests that *the Gayatri mantra* chanting can enhance attention potential in children (9). All these researches are conducted on chanting, but the effect of rhythm, which is an individual component of chanting, is yet unexplored. Prosody or *Chandas* are meters in Sanskrit language and are highly developed tools reflecting the great creative universal rhythms in all dance, music, and language. Classical Sanskrit poetry covers a wide range of meters, of which some are more popular, such as the *Indravajra*, *Totakam*, *Tunakam*, and *Bhujangaprayatam*(10). *Totakam* comparatively has a simpler pattern and thus feasible for children to follow.

An exciting aspect of Sanskrit Prosody lies in its being a system of pranayama techniques involving breath regulation. The practice of Nadishodhan pranayama and OM chanting has shown significant positive effects on students' memory enhancement (11). As per the knowledge of the authors, there is not a single research study specifically on the impact of Sanskrit Prosody/*Chandas*; hence we premeditated this study hypothesizing that *chandas* (meters/rhythm), irrespective of the language or meaning of the verse, will have a specific impact on

neuropsychological parameters like sustained attention and response inhibition in middle school children.

METHODS

Trial Design and Participants -

The current study was a four-armed parallel-group trial. The study was conducted in an English medium school in South Bangalore. Children studying in seventh and 8th grades were screened, recruited, and allocated into four groups - humming a *Chanda (HC)*, chanting a Sanskrit verse (*CS*), reading an English verse (*RE*), and silent sitting (*SS*) according to their sections. Children with any learning disability, hearing difficulty, and visual or verbal impairment were not included in the study. The institution's ethical committee approved the project, and a consent form was obtained from the parents of all participants after explaining the detailed procedure of the research trial. Permission to recruit the students was taken from the managing trustee of the school.

Intervention –

Subjects of all four groups followed their routine activity during the intervention period. In the HC group, children were oriented into learning the rhythm of a *chanda* called *totakam*. Children practiced this in the form of humming to nullify the effect of words or the meaning of the verse from chanting, thoroughly. In the CS group, children were made to learn a Sanskrit verse called *Madhurashtakam* in the same *totakam Chanda*. The RE group was taught an English verse by Jaggi Vasudev, widely known as Sadhguru. “*When your happiness is dependent upon what is happening outside of you, constantly you live as a slave to the external situation.*”, while the fourth group, i.e., SS group, was expected to sit in silence observing their thoughts with their eyes closed.

All groups were asked to follow their respective intervention, three times a day for 5 minutes, each making it a total of 15 minutes of intervention every day. Every ten students had one volunteer teacher to administer their practice and update about the same everyday post-school hours.

Outcome measures

Digit Letter Substitution Test (DLST) and Stroop Color-Word Test were used to obtain sustained attention and response interference before and after the intervention of 30 days. The DLST consists of randomly arranged digits in rows and columns, and students are asked to substitute as many target digits as possible in the specified time of 90 seconds. The net score was obtained by

deducting the wrong substitutions from the total number of substitutions attempted (12). Stroop, in 1935 originally proposed the most common type of SCWT(13). In this version, the participant needs to read three tables as fast as possible. The first two tables represent consistent conditions in which the participant needs to read the names of colors written in black ink [W] and names of color patches [C] (14). Whereas in the third group, called Color-Word (CW), color-word is printed in an incongruous color ink (for example, the word "green" is printed in blue color ink). In such an inconsistent condition, the participant must name the color of the ink instead of the word. Hence there is a comparative delay in response as there is an interference in attention due to a less automated task (15). SCWT is a highly reliable tool with an alpha of .89 for the color card, .93 for word card, and .82 for color-word card(16).

Statistical analysis

Outcomes were analyzed as per protocol basis using chi-square and Analysis of Variance (ANOVA) for categorical and continuous variables, respectively. All reported P values are based on a two-sided test, and a P value < 0.05 was considered significant. All statistical analysis was done using strata software. The characteristics, which had statistical significance at the baseline, were adjusted for baseline.

Results:

One forty students volunteered to participate in the study. Two students were not eligible because they had learning disabilities, as reported by their parents to the school authorities. 138 subjects with a mean age of 12.12 ± 0.74 were recruited after obtaining consent. Figure 1 represents the trial profile of the current trial, and the demographic characteristics, including age, gender, grade, and baseline levels of psychological assessments are presented in table-1. Baseline characteristics were not balanced across groups except Stroop's wrong answers. The intervention's adherence was cent percent as the intervention was taught during the school hours at the campus. The students who were absent from the school during the training days were taught the technique through video calling by the authors.

DLST and Stroop's scores were adjusted for baseline as they lacked balance at baseline ($p < 0.02$). Within-group analysis using sample t-test demonstrated significant changes in chanting, humming, and silent sitting groups ($p < 0.001$) with DLST scores. There was no statistical significance in the DLST scores in the English phrase reading group. The post-doc analysis revealed that the chanting group had higher scores; however, there were no differences between humming and chanting groups. Stroop scores improved in all the groups in the within-group analysis except for the silent sitting group. The ANOVA test revealed a significant difference

between the groups, post-intervention. Post-hoc analysis to examine the superiority between groups presented a higher statistical significance in the chanting group than the humming group. A statistical significance was also observed between the chanting and silent sitting group. In the Stroop mistake scores, there were statistical differences within the group in humming and chanting groups, but no differences were observed between groups.

Table:1 Baseline Characteristics of Subject

| Table 1 | Total (n-138) | Humming a Chanda (n-35) | Chanting a Shloka (n-35) | Reading an English Verse (n-30) | Silent Sitting (38) | p-value |
|--------------|---------------|-------------------------|--------------------------|---------------------------------|---------------------|---------|
| | Pre | Pre | Pre | Pre | Pre | |
| Age | 12.11±0.76 | 12.08±0.701 | 12.17±0.706 | 12.13±0.819 | 12.05±0.803 | |
| Gender | | | | | | |
| Male | 70 (50.83%) | 21 (60%) | 14 (40%) | 12 (40%) | 23 (60.53%) | |
| Female | 68 (49.17%) | 14 (40%) | 21 (60%) | 18 (60%) | 15 (40.47%) | |
| DLST | 43.55±14.09 | 39.71±14.15 | 49.4±16.75 | 43.63±10.11 | 41.63±12.75 | 0.02 |
| Stroop Net | 66.97±12.80 | 70.57±8.07 | 55.54±12.54 | 64.93±6.30 | 75.81±12.38 | <0.0001 |
| Stroop Wrong | 4.55±2.03 | 4.37±1.98 | 4.91±2.22 | 4.36±2.12 | 4.52±1.84 | 0.65 |

DLST - Digit Letter Substitution Test

Table: 2 Changes during the study in the evaluated variable (Mean ±SD) of the outcome and changes

| Outcome | Stage | Chanting (n=35) | % change | English Phrase Reading (n=30) | % change | Humming (n=35) | % change | Silent Sitting (n=38) | % change | p-value | p-value |
|---------|-------|-----------------|----------|-------------------------------|----------|----------------|----------|-----------------------|----------|---------|-------------------------|
| | | | | | | | | | | | adjusted (for baseline) |
| DLST | Pre | 49.4±16.75 | 10.30% | 43.63±10.11 | 3.00% | 39.71±14.15 | 20.40% | 41.63±12.75 | 12.40% | 0.02 | |

| | | | | | | | | | | | |
|-------------------------------------|----------------|----------------------|--------|--------------------|--------|---------------------|------------|---------------------|------------|-----------------|--------------------|
| | Post | 54.51 ±13.88 | | 44.96± 8.51 | | 47.82± 15.98 | | 46.81 ±12.60 | | 0.02 | 0.00 1a |
| | MD | - 5.07± 9.68 | | - 1.33±9. 19 | | - 8.11±9. 94 | | - 5.18± 8.69 | | - | |
| | p-value | <0.00 01 | | 0.43 | | <0.000 1 | | <0.00 1 | | - | |
| STRO OP | Pre | 55.54± 12.54 | | 64.93± 6.30 | | 70.57± 8.07 | | 75.81 ±12.38 | | < 0.000 1 | |
| | Post | 67.97 ±12.45 | 22.40% | 73.36± 9.29 | 13.00% | 80.20± 12.45 | 13.60 % | 78.39 ±14.22 | 3.40 % | 0.000 2 | <0.0 001 b,c |
| | MD | - 12.42 ±10.35 | | - 8.43±7. 67 | | - 9.62±1 3.27 | | - 2.57± 10.70 | | | |
| | p-value | <0.00 01 | | <0.000 1 | | 0.0001 | | 0.14 | | | |
| STRO OP MIST AKE | Pre | 4.91±2. 22 | | 4.36±2. 12 | | 4.37±1. 98 | | 4.52± 1.84 | | 0.65 | |
| | Post | 3.65± 2.27 | | 4.53±2. 11 | | 3.54±2. 25 | | 3.60± 2.22 | | 0.24 | 0.32 |
| | MD | 1.25± 2.87 | 25.70% | - 0.16±2. 37 | 3.90% | 0.82±2. 31 | 19.00 % | 0.92± 2.85 | 20.40 % | | |
| | p-value | 0.01 | | 0.7 | | 0.04 | | 0.053 9 | | | |

Table demonstrates the one way ANOVA between the groups at baseline and post treatment data. Baseline adjusted p value is calculated for those parameters which were not normally distributed at baseline across the groups. a = Chanting Vs English Phrase Reading, b = Chanting Vs Humming, c = Chanting Vs Silent Sitting, d= English Phrase Reading Vs Humming, e = English Phrase Reading Vs Silent Sitting, f = Humming Vs Silent Sitting

Discussion

During adolescence, middle school children experience immense biological and social role transformation (17), causing difficulty in coping with academic challenges(4). Chanting has so far proved its worth with enhancing memory, attention, and academic performance (18), but the individual component of chanting has not been explicitly studied. We attempted to study the prosody/*chanda* aspect of chanting, which is the rhythm and pauses used in Sanskrit *shloka* chanting. We wanted to identify the effect of prosody alone, irrespective of language, and the verse's meaning on similar parameters hypothesizing that there will be improvement in attention and response inhibition in children of this age group. Our study's findings showed that both Humming prosody and chanting a mantra in prosody had an equivalent impact in middle school children in sustained attention showing that rhythm has its impact irrespective of the verse or meaning of the verse. We also observed improvement in response interference within the group, and higher statistical significance was found in the Chanting group compared to the Humming group. While in Stroop mistake scores, a significant difference was found again in Humming and Chanting groups.

As per the author's knowledge, this study is the first attempt to investigate *chandās* as a useful tool to enhance cognitive abilities in children, especially in middle school, where vulnerability tends to grow, impacting academic motivation (19). Although preliminary, we managed to get a sample size of 138 students and 30 or more in each group for reliable results; we could not randomize children as per groups and instead randomly allocated groups to different sections in a grade due to limitations in school hours, which was a drawback of our study. Along with this, we could only give the intervention for 30 days as this was the amount of duration permitted by the authorities. This study would build a firm basis for researchers to incorporate all the limitations of our study and explore *chandās* and their maximum capacity.

Conclusion:

Our study results revealed that humming prosody and chanting a mantra have similar effects on sustained attention among adolescents. However, there were no changes in the response interference following humming prosody. Although this was a preliminary study and our results were encouraging, further studies would benefit school children and eventually children with special needs, to improve attention and other cognitive abilities.

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