

**EFFECT OF ZENTANGLE INTERVENTION ON ACADEMIC STRESS
AMONG HIGH SCHOOL STUDENTS**

Tanya Stephenie Bennett

B.Sc. Student, Department of Psychology, Women's Christian College, Chennai

Dr. D. Sumathi

Associate Professor, Department of Psychology, Women's Christian College, Chennai

Rini Ranjan

Guest Faculty, Department of Psychology, Women's Christian College, Chennai

Abstract

In India, the school board conducts 10th and 12th final examinations that potentially determine certain aspects of a student's future. Pressure from parents and teachers to perform well, along with long hours of study and academic obligations contribute to increasing stress in students, especially in 10th graders who appear for the board exam for the first time (Rajshree & Kumar, 2013). This study was aimed at exploring the effect of a Zentangle® intervention on academic stress among high school students. The sample, of 44 participants, chosen using Purposive Sampling, consisted of 9th and 10th graders from a school following Cambridge Board of education, in Chennai. The participants were randomly assigned to either the control group or the intervention group. Both groups were administered the Educational Stress Scale for Adolescents (ESSA) (Sun et al., 2011). The members of the intervention group attended a 2- hour online Zentangle workshop, conducted by the researcher who is a Certified Zentangle Teacher (CZT), on day 1. The next 5 sessions were conducted for an hour every day, where the participants tangled along with the CZT and later, uploaded their art onto a Google Drive. On the day of the final session, both groups were administered the ESSA once again. The Paired sample t-test was used to compare pre and post intervention scores of the intervention group and the independent sample t-test was used to determine the difference between the scores of the intervention group and the control group. A significant decrease in academic stress of the Intervention Group was found while comparing pre- and post- intervention scores of said group, implicating that the Zentangle® intervention had a positive impact on the academic stress of high school students.

Keywords: Zentangle® intervention, academic stress, high school students

In India, the school board conducts 10th and 12th final examinations that potentially determine certain aspects of a student's future. Pressure from parents and teachers to perform well, along with long hours of study and academic obligations like projects, homework, etc, contribute to increasing stress in students especially in 10th graders who appear for the board exam for the first time. (Rajshree & Kumar, 2013; Rani, 2017; Pascoe et al., 2019 & Mary et al., 2014).

The combination of the various aforementioned stressors takes a toll on student mental and physical health. (Yaribeygi et al., 2017). A number of studies have found a relationship between stress and poor academic performance (Struthers, Perry & Menec, 2000; Clark & Rieker, 1986 & Linn & Zeppa, 1984). COVID-19 has also shown to have psychological impacts on students (Mahapatra & Sharma, 2020; Moghe et al., 2020 & Cao et al., 2020)

The Zentangle® Method was developed in 2003 by Rick Roberts and Maria Thomas. Their aim was to provide a medium that aided in overcoming common blocks to creative flow such as: self-criticism, fear of failure, lack of immediate positive feedback, worrying about outcomes, frustration with lengthy training, lack of inspiration and doubts about the future (Kopeschny, 2016). General areas that a Zentangle® practice benefits include phobias, addictions, pain management, conflict resolution and workplace burnout (Kopeschny, 2016). Zentangle® intervention has proven to improve psychological well-being in adults (Ho, 2020)

Need for the study:

Excessive pressure from parents and teachers to perform well, long hours of study and academic obligations like projects, homework, etc, contribute to increasing stress in students especially in 10th graders who appear for the board exam for the first time. (Rajshree & Kumar, 2013; Rani, 2017; Pascoe et al., 2019 & Mary et al., 2014). As stressors in students

take a toll on their mental and physical health (Yaribeygi et al., 2017) as well as reduce their academic performance (Struthers, Perry & Menec, 2000; Clark & Rieker, 1986 & Linn & Zeppa, 1984), it is crucial that a simple and practical method to reduce stress is introduced into their lives.

Thus, this study is aimed at exploring the effect of a Zentangle® intervention on academic stress among high school students, with a vision to provide a simple and effective tool that can reduce stress in high schoolers and to, in later stages, aid them before their final exams.

The study is important for the following reasons:

1. To examine the relationship between a Zentangle® intervention and academic stress on high school students
2. To provide an intervention program that helps students manage their stress effectively, equip them with healthy stress management tactics and to enable them with a tool that can instantly relieve them of stress

PROBLEM AND HYPOTHESIS

Research Problem:

Does Zentangle® intervention have an effect on academic stress among high school students?

Objective:

To study the effect of Zentangle® intervention on academic stress among participants of the intervention group.

Rationale for Hypotheses:

Research has shown positive effects of a Zentangle® intervention on psychological well-being in adults (Ho, 2020). Studies have also shown that some general areas that a Zentangle® practice benefits include phobias, addictions, pain management, conflict resolution and workplace burnout (Kopeschny, 2016). There are limited studies carried on school students around the world, including India, related to these variables. Research relating a Zentangle® intervention to academic stress are close to none. Due to scarcity of research in these variables, the null hypotheses have been formulated.

Hypotheses:

1. There will be no significant difference in the pre-intervention scores of academic stress between the intervention group and the control group.
2. There will be no significant difference in the post-intervention scores of academic stress between the intervention group and the control group.
3. There will be no significant difference between the pre- and post-intervention scores of academic stress in the intervention group.
4. There will be no significant difference between the pre- and post- intervention scores of academic stress in the control group.

Method of Investigation:**Research Design:**

Pre- and post-intervention with control group design

Dependent Variable:

Academic stress

Independent Variable:

Zentangle® Intervention

Sample:

The sample consisted of 9th and 10th grade students (both boys and girls) from a private school in Chennai following the Cambridge education board. The sample size was 44, with 22 participants each randomly assigned to the intervention group and control group

Sampling Technique:

The method of sampling employed was Purposive Sampling.

Inclusion Criteria:

1. Adolescents from Grade 9 and Grade 10
2. Students from private schools of same education board
3. English medium school

Operational Definitions:**Academic Stress:**

Academic stress is defined as the body's response to academic-related demands that exceed adaptive capabilities of students (Alsulami et al., 2018)

Zentangle® Intervention:

In this study, the Zentangle® intervention involves a 2-hour online Zentangle® workshop conducted by a Certified Zentangle Teacher (CZT), inclusive of a 15-minute feedback session. For the next 5 sessions, the participants tangled each day for an hour along with the CZT.

Tools:

S. No	Name	Author & Year	Variable Measured
1.	Informed Consent	-	-
2.	Demographic Data Sheet	-	-
3.	Educational Stress Scale for Adolescents (ESSA)	Sun et al., 2011	Academic Stress

Educational Stress Scale for Adolescents (ESSA) (Sun et al., 2011)

Educational Stress Scale for Adolescents (ESSA), was developed by Sun et al. in 2011. The purpose of this scale is to measure the educational stress in adolescents

The 16-item ESSA contains five latent variables: Pressure from study, Workload, Worry about grades, Self-expectation, and Despondency. Thus, this instrument can be used to measure the multidimensional nature of educational stress.

Scoring:

The ESSA comprises of 16 questions scored using a 5-point Likert scale - 1 (strongly disagree) to 5 (strongly agree) with higher scores indicating greater stress.

Reliability:

The ESSA suggests good test-retest reliability - the total ESSA score was .78 and for the five factors was .75, .61, .70, .59, and .62, respectively. Each of the 16 items had an ICC ranging from .44 to .67, indicating moderate to good reliability over a period of more than two weeks.

Concurrent and Predictive Validity:

Because depression and suicidal thoughts have been linked to academic stress, they were utilised as criteria measures to examine predictive validity. The overall ESSA score was shown to be adversely connected with academic grades (Spearman $r = -.20$, $p.001$), indicating that students with poor academic performance have more stress.

Procedure:

Approval from the School Heads along with informed consent from the parents and then the participants were obtained. The information disclosed included details on the procedure and need for the study, guarantee that the study won't interfere with academic functioning. The tools were administered online along with a demographic data sheet for the participants to fill. This study did not offer stipend or material benefits.

The participants were randomly assigned to one of two groups – control group or intervention group, with 22 participants in each group. Both groups were administered the Educational Stress Scale for Adolescents (ESSA). The members of the intervention group attended a 2-hour online Zentangle® workshop, supervised by a faculty member, conducted by the researcher who is a Certified Zentangle Teacher (CZT). The session included a 15-minute feedback period. The workshop was recorded. The next 5 sessions were conducted for an hour every day, where the participants tangled along with the CZT, and later, uploaded their

art onto a Google Drive. All sessions were recorded and supervised. On the day of the final session, both groups were administered the ESSA once again.

Topic	Methodology	Duration
Icebreaker & Introduction	Activity & lecture	15 minutes
Zentangle® workshop	Group activity	1.5 hours
Feedback	Group discussion	15 minutes

RESULTS AND DISCUSSION

Two statistical methods were employed to establish the effect of Zentangle® intervention on academic stress. The Paired sample t-test was used to compare pre- and post-intervention scores of the intervention group and control group. The independent sample t-test was used to determine the difference between the scores of the intervention group and the control group.

Table 1

t-test for significance of mean differences between Intervention Group and Control Group with regard to Pre-Intervention scores on academic stress

Variable	Groups	N	M	SD	t	df	p
Academic Stress	Intervention	22	53.95	6.987	.761	42	.451 ^{NS}
	Control	22	53.40	9.811			

NS- Not Significant

There is no significant difference observed between the means of the intervention and control group in the Pre-Intervention scores of academic stress. Therefore, the null hypothesis (1) which states that “There will be no significant difference in the pre-intervention scores of academic stress between the intervention group and the control group” is accepted. Students were randomly assigned to intervention and control group. Thus, it can be observed that there is no significant difference in the Pre-intervention scores between the intervention and the control groups prior to the administration of the intervention module designed for the present study.

Table 2

t-test for significance of mean differences between Intervention Group and Control Group with regard to Post-Intervention scores on academic stress

Variable	Groups	N	M	SD	t	df	p
Academic Stress	Intervention	22	46.50	8.439	-4.011	42	0.000**
	Control	22	56.36	7.865			

***Significant at the 0.01 level*

In table 2, we see a significant difference in the mean data recorded for the Intervention Group and the Control Group. Therefore, the null hypothesis (2) which states that “There will be no significant difference in the post-intervention scores of academic stress between the intervention group and the control group”, is rejected. The academic stress experienced by

the participants in the Intervention Group, is visibly lower than the academic stress experienced by those in the Control Group. This could be because the Zentangle® intervention was effective in reducing stress levels. The intervention might have also provided the Intervention group with healthy stress management tools. The current study is supported by the findings from a research study done in 2020, that showed that Zentangle® has a positive impact on the psychological well-being of adults (Ho, 2020)

Table 3

t-test for Significance of mean differences between pre-intervention scores and post-intervention scores with regard to Intervention Group on academic stress

Variable	Measures	N	M	SD	t	df	p
Academic Stress	Pre-Intervention	22	53.95	6.987	7.177	21	0.000**
	Post-Intervention	22	46.50	8.439			

***Significant at the 0.01 level*

In this table, we see that the amount of academic stress in the participants has reduced significantly. The mean scores of the subjects have visibly reduced. Few subjects who attended only 1 session also experienced a reduction in the academic stress they experienced. This shows that the Zentangle® intervention was effective in reducing the academic stress among high school students. Therefore, the null hypothesis (3) which states that “There will

be no significant difference between the pre- and post-intervention scores of academic stress in the intervention group”, is rejected.

Table 4

t-test for Significance of mean differences between pre-intervention scores and post-intervention scores with regard to Control Group on academic stress

Variable	Measures	N	M	SD	t	df	p
Academic Stress	Pre-Intervention	22	53.40	9.811	-2.372	21	0.027**
	Post-Intervention	22	56.81	7.865			

***Significant at the 0.05 level*

In table 4, we see that, the academic stress among the control group has significantly increased during the study period. This is evident while comparing pre- and post- intervention mean scores of the control group. This can be explained by the fact that stress and burnout levels increase over time (Baker et al., 2003; Burke et al., 1996) Therefore, the null hypothesis (4) which states that “There will be no significant difference between the pre- and post- intervention scores of academic stress in the control group” is rejected.

CONTENT ANALYSIS

Feedback was collected from the participants of the intervention group regarding the Zentangle® intervention after Session 6. The form consisted of 7 open-ended questions that the participants answered online. The researcher identified a few common themes that the subject of the study experienced. They included:

1. Increased calmness and relaxation
2. Sudden stress relief
3. Increased alertness, focus concentration and patience
4. Temper management
5. Relief from eye strain, headaches and body pain
6. Decreased anxiety
7. Sense of accomplishment and confidence
8. Improved mood and mental health
9. Positive mindset
10. Introspection and peace

Few participants announced that they had begun doing tiny tangles, without the guidance of the CZT, whenever they were stressed to calm down, and saw a difference. From the content analysis we can infer that the intervention was effective in reducing stress among high school students along with their overall psychological well-being and concentration. From this it can be said that the qualitative data matches with the results of the quantitative data

The subjects experienced a positive mindset, improved focus and patience. A study done in 2019 corroborates these findings (Hui & Ma'rof, 2019) and proved that mindful art increased positive attitudes in individuals.

Alleviation of body ailments while tangling, as seen in this study, is along the lines of a 2016 study that showed that Zentangle® can aid with pain management and burnouts (Kopeschny, 2016). The reports of self-confidence, worrying about outcomes, anxiety and believing in themselves after engaging in this art form has also been seen and proven in the above-mentioned study (Kopeschny, 2016). From this it can be said that the qualitative data matches with the results of the quantitative data.

CONCLUSIONS

1. There was no significant difference between the mean scores of intervention group and Control group in the Pre-Intervention scores of academic stress, probably due to experiencing similar academic situations and experiencing similar levels of stress
2. There was a significant difference observed between that Pre-Intervention scores and the Post-Intervention scores of the Intervention group on academic stress. This shows that the Zentangle® Intervention had a positive impact on the academic stress of the participants
3. There was a significant difference between Pre-Intervention scores and Post-Intervention scores of the Control group on academic stress. This can be explained by the increase in stress and burnout levels over time (Baker et al., 2003; Burke et al., 1996)

LIMITATIONS

1. The study was conducted in the online mode due to Covid-19 pandemic
2. Long term effects of the intervention are currently unknown. If subjects engage in tangling by themselves when they are stressed, the effects of the intervention will last longer

3. Few subjects in the Intervention Group did not attend all sessions. This might have impacted the study findings.

IMPLICATIONS OF THE PRESENT STUDY

1. This intervention study has various implications and applications in today's world. The finding that a Zentangle® Intervention has a significant positive effect on Academic Stress on High School students shows that Zentangle® can be used as an academic tool to aid students.
2. This tool can reduce stress and provide healthy stress management tactics. Hence, the present study is an important steppingstone in mindful art therapy and research in psychological well-being. Furthermore, it introduces a comparatively new mindful art therapy module, Zentangle®, into the Indian context as well as the Indian academic environment.
3. Zentangle®, once learnt, is a self-help tool that can be done without supervision. This means that, those who receive this intervention, even for one session, can proceed to tangle by themselves to reduce their stress. It is efficient and time-effective, as the shortest tangle can take less than 5 minutes, and still have a positive impact on the individual (CA Malchiodi, 2012)
4. The current study's findings have also highlighted that all high school students might be struggling with similar stressful situations that take a toll on their mental and physical health, thus pressing the need for a tool that collectively increases their well-being and reduces their stress.

SCOPE FOR FURTHER RESEARCH

1. Studying the difference between a Zentangle® trace and a hypnotic trance. If there is no difference between the two trances, or if the Zentangle® trance has more benefits, this study can be utilized in areas of psychology when the client is too young or is not willing to partake in hypnosis or integrated into their program
2. Studying the effect of a Zentangle® intervention on younger age groups than in the current study and integrating it into their curriculum. This can broaden the scope of the current study and aid students.
3. Studying the effect of a Zentangle® intervention in relation to different cultural backgrounds. This study can highlight if the Zentangle® method has more impact on certain cultures or if the benefits remain the same despite these differences.
4. Studying the brain processes during the Zentangle® intervention and comparing it to medical treatments for body ailments. This can pave way for more effective cures and encourage natural and better treatment methods in the medical field.
5. Studying the effect of Zentangle® art on those with OCD and related disorders. Since Zentangle® does not have a need for perfection in the art, this study can be used as a treatment method for these individuals if the findings are positive.

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