An-Najah National University
Faculty of Graduate Studies

THE EFFECTIVENESS OF EYE MOVEMENT DESENSITIZATION AND REPROCESSING ON TREATING GENERALIZED ANXIETY DISORDER AMONG HIGH SCHOOL STUDENTS

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Dedication

To my gift from God, and great blessing that I live with, my husband and my children (Hatim and Bella), To you I dedicate this humble research.

Acknowledgements

I would like to take this opportunity to thank you for your generous and great support to bring this research to end, I am very grateful to you and your help, Praise be to God who provided me with this opportunity, and thousand thanks to your kind heart and generous person.

Declaration

I, undersigned, declare that I submitted thesis entitled:

THE EFFECTIVENESS OF EYE MOVEMENT DESENSITIZATION AND REPROCESSING ON TREATING GENERALIZED ANXIETY DISORDER AMONG HIGH SCHOOL STUDENTS

I declare that work provided on this thesis, unless otherwise referenced, is researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Date: 3/6/2025

Table of Contents

List of Tables

List of Appendices

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Abstract

This study investigates effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) therapy on reducing Generalized Anxiety Disorder (GAD) among high school students, Using an experimental design with sample of 60 students, participants were equally divided into an experimental group (30 students) receiving EMDR intervention and control group (30 students) with no intervention, GAD-7 scores measured changes on anxiety levels pre-and post-intervention, Findings reveal notable improvement on experimental group, with reduction on GAD-7 scores indicating an average anxiety decrease of approximately 29%, while control group's scores showed no significant change, Statistical analysis also examined demographic factors such as gender, monthly income, family education level, and marital status, revealing EMDR's adaptability across these variables, with minimal variation on effectiveness, Study limitations include sample size, short-term follow-up, and reliance on self-reported measures, which may impact generalizability of results, This study highlights EMDR's potential as an accessible, non-pharmaceutical intervention for adolescent anxiety within school settings, Future research should explore long-term effects of EMDR on larger, more diverse samples to validate findings and examine additional environmental and psychological influences.

Keywords: EMDR, Generalized Anxiety Disorder, high school students, experimental design, adolescent mental health, anxiety intervention, GAD-7, psychological therapy, school-based treatment

Chapter one

Introduction and Background

1.1 Introduction

The high school stage is pivotal period on student's life, marked by numerous challenges, It signifies significant transition, fostering personal and cognitive growth as students prepare to tackle future obstacles, By dedicating themselves to hard work during this phase, students pave way for success and meaningful progress on their lives (Musaxonovna, 2022).

Secondary education are pivotal milestones on student's journey, often posing significant challenges, These exams can shape trajectory of student's future, either positively or negatively, Ultimately, impact of their difficulty hinges on how students confront and utilize these challenges for personal growth and learning, Adequate support from family, school, and community plays crucial role on helping students navigate these obstacles and pave way for future success (Atuhurra & Kaffenberger, 2022).

The connection between high school students and generalized anxiety disorder (GAD) is multifaceted and can differ significantly from one student to another, (Dugas et al., 2022; Lin, 2022), Generalized Anxiety Disorder (GAD) is psychological condition characterized by excessive and persistent anxiety and stress concerning various aspects of daily life, Individuals with GAD often experience heightened worry and tension, even when there is little or no reason for concern (Atuhurra & Kaffenberger, 2022).

It is important to highlight that high school stage itself is not typically viewed as direct cause of generalized anxiety disorder (GAD), It is essential to differentiate between normal anxiety, which is natural response to stressors, and pathological anxiety, which characterizes disorders like GAD (Dugas et al., 2022; Lin, 2022), If students are experiencing recurring and persistent symptoms of anxiety that disrupt their daily lives, seeking help from professional psychologist is important, They can assess condition objectively and provide tailored support and assistance, Treating generalized anxiety disorder on high school students necessitates an integrated approach involving multiple steps and strategies, (Marlow et al., 2023; Payne et al., 2011; Tillfors et al., 2011; Zheng et al., 2023), It's essential to emphasize that treating generalized anxiety disorder demands patience and perseverance, While there may not be an immediate solution, consistent

efforts and implementation of appropriate strategies can lead to significant improvements on students' quality of life and their ability to cope with challenges, This underscores importance of considering approaches like Eye Movement Desensitization and Reprocessing (EMDR) on addressing generalized anxiety disorder among high school students,

Eye Movement Desensitization and Reprocessing (EMDR) is psychotherapy approach designed to help individuals process distressing memories and alleviate associated symptoms, including those of anxiety disorders like generalized anxiety disorder (GAD), During EMDR sessions, therapist guides student through bilateral stimulation, typically involving side-to-side eye movements, auditory tones, or taps, This bilateral stimulation is believed to facilitate brain's processing of traumatic or distressing memories, allowing them to be reprocessed on more adaptive and less distressing manner, Through repeated sets of these bilateral stimulations, students can experience reduction on intensity of their anxiety symptoms and an improvement on their overall well-being, EMDR is often integrated into comprehensive treatment plan that may include other therapeutic modalities and coping strategies tailored to individual student's needs.

1.2 Theoretical basis

1.2.1 Secondary education (high school)

Secondary education, or intermediate or advanced secondary education, encompasses educational phase that follows primary education and precedes higher education, This stage typically begins after completion of primary education (primary school) and spans duration of three to five years, varying based on educational framework within each country (Atuhurra & Kaffenberger, 2022).

Secondary education encompasses diverse range of study programs aimed at enriching students' knowledge and skill sets, preparing them for further education or entry into workforce, specific curriculum and subjects offered can differ significantly based on country and educational system on place, Typical subjects include mathematics, science, languages, social studies, and more, providing students with well-rounded educational experience tailored to their academic needs and career aspirations (Musaxonovna, 2022).

In some educational systems, secondary education is compulsory as students must move on to this stage after completing primary education, while on other systems it is optional, and students can choose to pursue secondary education or choose other paths such as vocational or technical education (Amaghouss & Zouine, 1 C.E.; Atuhurra & Kaffenberger, 2022) Secondary education is crucial stage on education path for students as they acquire academic knowledge and skills that pave way for them to move on to higher education or prepare for job market, It also provides students with an opportunity to test their interests, identify their future career interests, and help make future decisions that are appropriate for them.

1.2.2 Anxiety among high school students

Examination systems:

Examination systems is process of organizing and administering tests or examinations to measure students' or candidates' knowledge, skills, and understanding on specific set of subjects or fields of study, Examination systems are applied at all levels of education, from primary education to higher education and postgraduate studies (Kirkpatrick & Zang, 2011).

Examination systems aim to assess extent to which students or candidates achieve specific educational goals and evaluate their understanding and comprehension of study materials, This process contributes to motivating students, enhancing academic achievement, and developing intellectual skills and abilities, examination process must be conducted on fair, transparent, and balanced manner to ensure that it provides an accurate picture of level of knowledge and proficiency of students and candidates (Al Amin & Greenwood, 2018).

The final exam on Secondary education aims to motivate students to achieve best academic performance and assess their level of academic achievement, results help on making future decisions related to education and academic achievement of students (Hearn, Donovan, Spence, March, & Holmes, 2017).

Pre-University Final Examination is an assessment test usually taken at end of school year on pre-university educational stages, such as high school or middle school, This exam is taken to measure students' achievement of academic goals and their understanding of subjects, results of final exam at Secondary education are considered as an influencing factor on students' subsequent education path, results may affect selection of appropriate university major and determine opportunities available to student to enroll on universities and academic institutions, Some of goals and reasons why final examination at Secondary education is important include orienting students towards majors or fields that suit their academic level and interests, It directly affects university admission, on some educational systems, final exam results are criterion for students' admission to universities and higher institutions (Payne, Bolton, & Perrin, 2011).

1.2.3 Generalized Anxiety Disorder (GAD)

1.2.3.1Generalized Anxiety Disorder (GAD) definition

Generalized Anxiety Disorder (GAD) is psychiatric disorder characterized by constant, almost constant anxiety, and stress about variety of things and topics for no apparent reason, GAD is one of most common anxiety disorders and it can affect daily life and function of people who suffer from it (Marlow, et al., 2023).

Feeling anxious or nervous Anxiety is often normal, For example, many people feel anxious when they are facing financial problems, problems at work, or family difficulties, But, if person feels anxious most of time, even when they do not have problems or are These problems are minor, then he has an anxiety disorder (Theuring, et al., 2023; Dugas, et al., 2022).

There are several types of anxiety disorders, If patient feels anxious about one particular thing, such as being on crowd, they may suffer from phobia, And if patient does not feel anxious most of time, but sometimes he suddenly becomes afraid.

1.2.3.2 Symptoms of GAD

A generalized anxiety disorder may affect performance on secondary school exams because of its nature of persistent anxiety and abnormal tension, For people with generalized anxiety disorder, exams and time spent studying can be source of stress and

anxiety, This severe anxiety may affect focus and attention and affect students' academic performance (Atuhurra & Kaffenberger, 2022; Lin, 2022).

Among factors that may affect academic performance of students with generalized anxiety disorder are (Amaghouss & Zouine, 2022):

Difficulty concentrating: Persistent anxiety can make it difficult for students to concentrate during exams and studying, affecting their ability to understand material and solve problems accurately.

Psychological discomfort: Severe anxiety can be cause of psychological discomfort and emotional tension during exams, which can affect students' self-confidence and psychological readiness for exam.

Poor sleep: Some people with generalized anxiety have trouble sleeping well, which can affect attention and general performance during tests.

Avoid disturbing situations: Some people with generalized anxiety may tend to avoid situations that cause them anxiety, and this may lead to avoiding studying and preparing for tests fully.

It is necessary to treat generalized anxiety disorder appropriately to control its impact on academic performance, Psychological support and psychotherapy such as cognitive-behavioral therapy can help deal with anxiety and improve academic achievement and exam preparation, Relaxation strategies and stress management techniques can also help deal with stress from exams and study.

1.2.3.3 clinical symptoms of Generalized anxiety disorder

Generalized anxiety disorder is psychiatric disorder that can cause range of clinical symptoms related to persistent, abnormal anxiety and stress about many issues and topics on daily life, Common clinical symptoms associated with generalized anxiety disorder include (Theuring, et al., 2023; Dugas, et al., 2022)

Persistent and unexplained anxiety: person feels anxious and tense almost constantly without apparent reason, even under normal circumstances.

Excessive anxiety: People with generalized anxiety tend to think excessively about negatives and threatening fears and avoid potential issues of concern.

Difficulty controlling anxiety: It is difficult for people with generalized anxiety disorder to control their anxious thoughts and stop thinking about worrying topics.

Worrying about future events: person with generalized anxiety always expects negative events to happen on future and anxiously anticipates what might happen.

Physical stress: Some patients with generalized anxiety disorder experience physical symptoms such as phobias and muscle tension, which can affect sleep, digestion, and concentration.

Social Avoidance: Generalized anxiety may be reason to avoid social places and potential social situations to avoid anxiety and stress.

It should be noted that symptoms of generalized anxiety disorder must be persistent for long time and cause disruption and interfere with person's daily life and function before disease can be diagnosed, If you have generalized anxiety disorder-like symptoms that are affecting your daily life, it is important to see qualified healthcare provider to evaluate your condition and direct you to necessary treatment.

1.2.3.4 Generalized anxiety disorder among high school students

A generalized anxiety disorder may be common among high school students, and it may appear especially and escalate before exams due to high stress and academic pressures, Among symptoms that high school students with generalized anxiety disorder may display before exams are (Marlow, et al., 2023; Tillfors, et al., 2011):

1. Persistent anxiety: Students feel very anxious and stressed about upcoming exams and academic performance.
2. Excessive anxiety about performance: Students look anxiously when thinking about their performance on exams and fear that they will not be able to excel.
3. Difficulty concentrating: Students find it difficult to concentrate while studying and preparing for exams due to constant thinking about results and improvement.
4. Gastroesophageal reflux: Some students may experience digestive problems such as stomach pain and nausea due to anxiety.
5. Bad Sleep: Students' sleep can be affected due to anxiety and stress, which affects concentration and overall performance during exams.
6. Avoidance and evasion: Some students may tend to avoid studying and preparing for tests due to anxiety, and prefer to avoid worrying situations.
7. Emotional disturbances: Generalized anxiety may be cause of mood swings and other emotional disturbances.

To deal with generalized anxiety disorder before exams, students are advised to apply some strategies to relieve stress, such as planning well for studying, getting enough sleep, and practicing exercise and relaxation techniques, It is also important to seek support of teachers and parents to guide and support them through this difficult period, on event that abnormal anxiety and stress persist and significantly affect student's life, he or she should consult qualified healthcare provider to evaluate condition and direct it to appropriate treatment (Hearn, Donovan, Spence, March, & Holmes, 2017; Kirkpatrick & Zang, 2011).

1.2.3.5 Generalized Anxiety Disorder Treatment

Treatment of generalized anxiety disorder includes range of treatment options, and appropriate treatment is chosen according to severity of condition and impact it has on individual's life, Among common treatments for generalized anxiety disorder are (Marlow, et al., 2023; Tillfors, et al., 2011):

1. Psychotherapy (Cognitive Behavioral Therapy): Psychotherapy is first and most effective treatment option for generalized anxiety disorder, cognitive behavioral therapist works with patient to identify and change negative thoughts, perceptions, and

disturbed behavioral patterns, This approach helps to develop positive thinking skills and correct handling of anxiety-provoking situations.

2. Medication: Antidepressants and anti-anxiety medications may be used to relieve symptoms of generalized anxiety disorder, These medications are usually prescribed for severe cases that significantly affect daily life.

3. Training on relaxation techniques: Relaxation techniques can be helpful on dealing with ongoing stress and anxiety, and include deep breathing techniques, meditation, and muscle training.

4. Teaching social skills: Learning social skills may help improve communication with others and deal with potential social situations to reduce anxiety and stress.

5. Psychological support: Psychological support from teachers, family and friends may be helpful on providing emotional support and helping to deal with anxiety.

It is recommended that qualified healthcare provider be consulted to evaluate condition and determine most appropriate and effective treatment for generalized anxiety disorder, Regular therapy sessions may be necessary to help develop anxiety management skills and improve overall quality of life.

1.2.4 EMDR Treatment of generalized anxiety disorder

EMDR is focused and specific therapeutic approach that has proven effective on treating range of emotional disorders on adults and children, including: psychological trauma, anxiety, fears, coping with loss, and physical problems with an emotional and emotional complex (Hearn, Donovan, Spence, March, & Holmes, 2017; Payne, Bolton, & Perrin, 2011).

EMDR stands for Eye Movement Desensitization and Reprocessing, specialized treatment technique used to treat psychological disorders and trauma, Developed by Dr, Francine Shapiro on early 1980s, EMDR is primarily designed to treat post-traumatic stress disorder (PTSD), but it can also be used to treat other disorders and improve overall mental health.

EMDR therapy is based on concept that traumatic memories and trauma that caused disorder are "unprocessed information" on brain, Therapy aims to free this unprocessed information and process it properly.

During EMDR sessions, patient is asked to focus on painful and traumatic memories while eyes are moved specifically by therapist or at direction of therapist, Eye movements or other sensory source movements such as hand pressure or listening to natural sounds can be used.

Research studies believe that these sensory movements contribute to alternating stimulation of right and left side of brain, helping to process traumatic memories and reduce their psychological and emotional impact.

EMDR treatment steps

EMDR therapy usually consists of several steps taken during treatment sessions, Here are basic EMDR treatment steps(Lin, 2022; Marlow et al., 2023; Theuring et al., 2023):

1. Assessment and planning: Treatment begins with an assessment session to learn about history of case and identify psychological problems and painful memories that will be addressed, therapist also sets desired goals for treatment.
2. Focus on traumatic memories: patient is asked to choose specific traumatic memories that they would like to address, specific details of memories are identified and focused on during session.
3. Eye movement or sensory movements: After painful memories are identified, patient begins to focus on them while eyes are moved regularly by therapist, Other sensory movements such as squeezing hand or listening to natural sounds can be used instead of moving eyes.
4. Analysis and treatment: session continues with patient's follow-up and focus on painful memories while sensory stimulation is applied, This helps to process painful memories and reduce their psychological impact.
5. Review and Evaluation: At end of session, sensations, feelings and thoughts that emerged during treatment are reviewed, response to treatment is assessed and decision is made to determine if there is need for further sessions.

EMDR therapy sessions can continue for period of time until painful memories are fully processed and desired psychological improvement is achieved, Sessions may be related to specific stage of treatment, however, number of sessions can be customized and arranged according to psychological state of each individual individually.

1.3 Literature review

EMDR therapy has shown positive effects on anxiety on various populations, on adolescents with specific phobia and test anxiety, EMDR therapy significantly decreased fear scores and test anxiety sub-scale and total scores on athletes with stress related to traumatic events, EMDR therapy resulted on beneficial changes on anxiety levels and self-confidence, on professional golfers, EMDR therapy reduces anxiety levels associated with athletic traumas, EMDR therapy has also been effective on reducing test anxiety on students, with one case study showing decrease on anxiety levels after EMDR treatment, Additionally, EMDR therapy has demonstrated positive effects on panic and phobic symptoms on adults with anxiety disorders, although further research is needed , Overall, EMDR therapy has shown promise on reducing anxiety on various populations.

1.3.1 Effectiveness of EMDR for Anxiety Disorders

Several studies explore effectiveness of EMDR therapy on treating anxiety disorders, including panic disorder, generalized anxiety disorder (GAD), and specific phobias, Research by Elisa Faretta et al, (2019) and others suggests that EMDR therapy may be effective for panic disorder and specific phobias, These studies emphasize need for further research to evaluate its efficacy for other anxiety disorders (Faretta et al., 2019), Additionally, studies such as one by Farima Rezvani et al, (2015) provide evidence supporting effectiveness of EMDR treatment on reducing pathological worry on patients with GAD, indicating its potential as treatment option for this specific anxiety disorder.

1.3.2 EMDR for Trauma-Related Anxiety

Studies also investigate use of EMDR therapy on reducing anxiety related to traumatic experiences, such as athletic traumas, childbirth after previous stillbirth, and test anxiety, Research by Luis Felipe Reynoso-Sánchez et al, (2023) and Narges Zolghadr et al, (2019) demonstrate efficacy of EMDR therapy on managing post-traumatic stress associated with sports injuries and reducing childbirth anxiety on women with previous stillbirth, respectively, Additionally, examinations of EMDR therapy for specific phobias and test anxiety on adolescents by Kader Bahayi (2023) further support its effectiveness on reducing anxiety symptoms related to trauma, Studies such as one by PhD, Zeynep Gamze Kalkanlı (2022) highlight potential of EMDR therapy on addressing exam anxiety among students, indicating its utility on managing anxiety associated with academic stressors.

1.3.3 EMDR for Other Conditions

Furthermore, studies explore potential of EMDR therapy on treating various conditions beyond PTSD and anxiety disorders, For instance, research by Mara Regina Raboni et al, (2006) examines use of EMDR therapy on improving sleep quality, quality of life, and perception of stress on patients with PTSD, Similarly, study by Fuat Torun (2010) investigates efficacy of EMDR therapy on reducing anxiety associated with vaginismus, condition characterized by involuntary vaginal muscle spasms, Moreover, study by Charles Scelles et al, (2021) explores potential benefits of EMDR therapy on treating wide range of pathological conditions, suggesting its efficacy beyond traditional applications.

1.3.4 EMDR for Performance Anxiety

Lastly, studies delve into application of EMDR therapy on managing performance anxiety, particularly on athletes and musicians, Investigations by Elizabeth Brooker (2019) and others highlight effectiveness of EMDR therapy on reducing trait anxiety and music performance anxiety on advanced pianists, Similarly, studies by Niall Falls et al, (2018) and PhD, Zeynep Gamze Kalkanlı (2022) discusses potential benefits of EMDR therapy on reducing anxiety related to athletic traumas and exam anxiety, respectively, study by Olga C Wallis et al, (2020) also explores application of EMDR therapy on reducing anxiety and improving self-confidence on athletes with post-traumatic stress associated with injury, indicating its potential to enhance athletic performance and psychological well-being.

In summary, findings from these studies collectively underscore versatility and effectiveness of EMDR therapy on addressing anxiety symptoms across various populations and conditions, ranging from trauma-related anxiety disorders to performance anxiety on athletes and musicians.

In analyzing findings of studies, both similarities and differences emerge regarding effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) therapy on reducing anxiety symptoms.

- Reduction on Anxiety: Across various studies, consistent pattern emerges indicating reduction on anxiety symptoms following EMDR therapy, Regardless of specific anxiety disorder or trigger, EMDR therapy demonstrates efficacy on alleviating anxiety symptoms.

- Improvement on Quality of Life: Many studies highlight not only reduction on anxiety but also an improvement on overall quality of life, This improvement extends to various aspects such as sleep quality, self-confidence, and general well-being

- Feasibility and Safety: studies commonly emphasize feasibility and safety of EMDR therapy, suggesting it as viable option for treating anxiety-related conditions across different populations

- Treatment Setting: Some studies explore effectiveness of EMDR therapy on non-traditional settings such as online group protocols or sports environments, while others focus on traditional clinical settings .

- Specificity of Anxiety Disorders: Variations exist on specificity of anxiety disorders examined, While some studies focus on specific conditions like panic disorder or PTSD, others investigate anxiety symptoms related to diverse triggers such as natural disasters or athletic traumas

- Sample Characteristics: Differences on sample characteristics, including age, gender, and clinical diagnosis, contribute to variations on findings across studies, Studies involving adolescents may yield different results compared to those involving adults or athletes

- Methodological Approaches: Variations on study designs, intervention protocols, outcome measures, and follow-up durations contribute to differences on findings, Some studies employ randomized controlled trials, while others utilize case studies or pilot studies(Sánchez et al., 2023).

Overall, while there are differences on specific contexts and populations studied, collective evidence suggests that EMDR therapy is promising intervention for reducing anxiety symptoms and improving overall well-being across diverse populations and settings.

1.4 Problem statement

EMDR (Eye Movement Desensitization and Reprocessing) therapy is psychotherapeutic method utilized for treating various mental disorders, including generalized anxiety disorder, This treatment has garnered recognition for its effectiveness and has demonstrated positive outcomes on numerous studies, Research e.g (Dugas et al., 2022; Lin, 2022; Theuring et al., 2023; Zheng et al., 2023) indicates that EMDR therapy can be effective on reducing symptoms associated with generalized anxiety, such as excessive stress, persistent worrying, and repetitive negative thinking, therapy works by targeting negative memories and reprocessing them on specialized manner, enabling individuals to alter their thought patterns and cope with these memories more effectively, current study seeks to examine effectiveness of Eye Movement Desensitization and Reprocessing on Treating Generalized Anxiety Disorder Among High School Students

1.5 Study Questions

The current study will try to answer following main question:

"To what extent is Eye Movement Desensitization and Reprocessing (EMDR) effective in reducing symptoms of Generalized Anxiety Disorder (GAD) among high school students?"

From this main question, following sub-questions are derived

1. What are levels of generalized anxiety among high school students diagnosed with Generalized Anxiety Disorder (GAD) before receiving EMDR intervention?
2. Are there significant differences in GAD-7 scores between pre-test and post-test among high school students who received EMDR intervention (experimental group)?
3. Are there significant differences in post-test GAD-7 scores based on group type (experimental vs, control), gender, monthly family income, parental education level, and parents' marital status among high school students?

1.6 Significance of study

The importance of current study stems from importance and its position related to EMDR therapy, It is one of psychotherapeutic methods used to treat mental disorders, including generalized anxiety disorder, This treatment is considered effective and has shown positive results on several studies.

Below are details of effectiveness of EMDR therapy on treating generalized anxiety disorder among high school students on tests:

1. Reducing symptoms of anxiety: Studies have shown that EMDR therapy may help reduce symptoms associated with generalized anxiety, such as excessive stress, persistent worrying, and repetitive negative thinking, Therapy works by focusing on negative memories and reprocessing them on special ways that allow you to change your thinking and deal with them better.

2. Improving Self-Confidence: EMDR therapy may help students build confidence on themselves and their abilities to handle challenges and tests, Therapy helps change negative self-beliefs and promote positive self-image.

3. Overcoming negative memories: EMDR therapy uses sequential eye movements to help reduce intensity of negative and distressing memories associated with anxiety, This helps students release negative emotions associated with those memories and overcome anxiety.

4. Enhancing Emotional Resilience: Therapy can help students enhance their emotional resilience and better deal with feelings of anxiety and stress during exams.

5. Improved academic performance: By relieving generalized anxiety, EMDR therapy may improve students' focus and overall academic performance, and this may lead to better test results.

6. Results of current study may benefit those on charge of secondary education, researchers, academics, and specialists about importance of EMDR-based therapy on reducing level of generalized anxiety disorder among secondary school students.

It should be noted that response to treatment varies from person to person, and success depends on many factors, including severity of disorder and student's commitment to treatment, It is recommended that psychologist be consulted to assess condition and determine best method of treatment.

1.7 Study Objectives

Main Objective:

To evaluate effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) therapy in reducing symptoms of Generalized Anxiety Disorder (GAD) among high school students.

Specific Objectives:

In line with main objective, this study seeks to:

1. Identify levels of generalized anxiety among high school students diagnosed with GAD before receiving EMDR intervention.
2. Assess effectiveness of EMDR by examining differences in GAD-7 scores between pre-test and post-test within experimental group.
3. Examine whether post-test GAD-7 scores significantly differ according to group type (experimental vs, control), gender, monthly family income, parental education level, and parents' marital status.

1.8 study hypothesis

The current study seeks to test following null hypothesis:

1. There are no statistically significant differences (at $p \leq 0.05$) between pre-test GAD-7 scores of high school students diagnosed with Generalized Anxiety Disorder (GAD) and hypothetical reference mean.
2. There are no statistically significant differences (at $p \leq 0.05$) in GAD-7 scores between pre-test and post-test among high school students in experimental group who received Eye Movement Desensitization and Reprocessing (EMDR).

3. There are no statistically significant differences (at $p \leq 0.05$) in post-test GAD-7 scores based on group type (experimental vs, control), gender, monthly family income, parental education level, and parents' marital status among high school students diagnosed with GAD.

1.9 Study terminology

Eye Movement Desensitization and Reprocessing (EMDR):

EMDR is psychotherapeutic approach that integrates elements of cognitive-behavioral therapy (CBT) with bilateral stimulation techniques, aiming to alleviate distress associated with traumatic or distressing memories by facilitating their reprocessing.

Generalized Anxiety Disorder (GAD):

GAD is mental health disorder characterized by excessive and persistent worry or anxiety about wide range of events or activities, often accompanied by physical symptoms such as restlessness, fatigue, and difficulty concentrating, Generalized Anxiety Disorder 7-item scale (GAD-7) is widely used self-report questionnaire designed to assess severity of generalized anxiety disorder symptoms, It consists of seven items that inquire about various aspects of anxiety experienced over past two weeks, Each item is scored on scale from 0 to 3, reflecting frequency of symptoms (0 = not at all, 1 = several days, 2 = more than half days, 3 = nearly every day), Total scores range from 0 to 21, with higher scores indicating greater symptom severity, GAD-7 is reliable and valid tool for screening and monitoring generalized anxiety disorder on clinical and research settings.

Effectiveness:

Effectiveness refers to degree to which particular intervention or treatment achieves its intended goals or outcomes within given population or context, Effectiveness can be estimated by Effect Size Calculation by determining difference between pre-test and post-test measurements, Common effect size measures for repeated measures ANOVA include partial eta squared (ηp^2) or Cohen's d.

Chapter two

Methodology

2.1 Methodology

This section includes method and procedures and includes study methodology as well as study population and its sample to which study was applied, and its sessions aim to achieve purposes and objectives of study, which are presented as follows:

2.2 Study design

The researcher used semi-experimental approach based on examining effect of independent variable (Effectiveness of EMDR treatment) on dependent variables (Generalized Anxiety Disorder Among High School Students Before Start of Exams) pre-post measurement, and this study was based on examining effect of Treating Generalized Anxiety Disorder Among High School Students Before Start of Exams was applied to experimental group, and comparing results of post-measurement with pre-measurement of this group, and design of study with symbols is:

E O1 X O2,

where symbol (E) indicates experimental group, and symbol (O1) indicates pre-measurement (Generalized Anxiety Disorder), and symbol (X) for treatment, which is Effectiveness of EMDR treatment, and symbol (O2) refers to post-measurement (Generalized Anxiety Disorder), and symbol (C O1 - O2) refers to control group, and symbol (O1) refers to pre-measurement (Generalized Anxiety Disorder), symbol (-) no treatment, O2 symbol for dimensional (Generalized Anxiety Disorder),

3.2 Sample and sampling

The study population consisted of all high school students enrolled at Al-Shamila Secondary School in Kafr Qasim during academic year 2022–2023, school has an estimated total student body of approximately 800 students, study specifically targeted adolescents aged between 14 and 17 years, as this age group is particularly prone to psychological and emotional challenges.

The study sample included 60 students, who were equally divided into two groups: an experimental group (30 students) who received Eye Movement Desensitization and Reprocessing (EMDR) intervention, and control group (30 students) who received no intervention, research focused on assessing anxiety symptoms among male and female high school students in public schools using GAD-7 scale.

To ensure that sample was both representative and demographically balanced—especially in terms of gender—a combination of random sampling and stratified sampling was used, This approach minimized potential bias and enhanced generalizability of findings to broader population of high school students, Moreover, it enabled focused examination of potential gender-based differences in anxiety symptoms, which aligned closely with study's core objectives.

2.3 Data Collection

The researcher will rely on application of study tools on male and female students' public schools, where scale will be distributed face to face across public schools on study sample, It sounds like researcher plans to conduct face-to-face distribution of GAD-7 scale to male and female students on public schools as part of their study, This approach can be effective on gathering data on anxiety symptoms among high school students, Here are some considerations and steps researcher may want to take:

1. Ethical Approval: Ensure that study protocol, including distribution of GAD-7 scale, has received ethical approval from relevant institutional review board (IRB) or ethics committee.

2. Informed Consent: Obtain informed consent from both students participating on study and their parents or legal guardians if students are minors, Provide clear information about purpose of study, voluntary nature of participation, and how data will be used and protected.

3. Participant Recruitment: Work with school administrators to gain permission to conduct study within public schools, Coordinate with teachers or other school staff to schedule times for distributing GAD-7 scale to students.

4. Distribution Procedure: Develop standardized procedure for distributing GAD-7 scale face-to-face to students, Ensure that process is clear and consistent across all schools and participants to minimize variability on data collection.

5. Privacy and Confidentiality: Respect privacy and confidentiality of students' responses, Provide private and confidential space for students to complete GAD-7 scale, and assure them that their responses will be anonymized and kept confidential.

6. Cultural Sensitivity: Consider cultural factors that may influence students' understanding of and responses to GAD-7 scale, Ensure that scale is culturally appropriate and that students feel comfortable and respected throughout process.

7. Data Management: Establish protocols for securely collecting and storing completed GAD-7 scales to protect participants' privacy and confidentiality, Consider using coded identifiers to link individual responses while maintaining anonymity.

8. Data Analysis: Plan for analysis of collected data, including determining appropriate statistical methods for analyzing differences on anxiety symptoms between male and female students.

9. Feedback and Reporting: Consider providing feedback to participating schools and students about study's findings, as appropriate, Prepare comprehensive report of study results for dissemination to relevant stakeholders.

By following these steps and considerations, researcher can conduct face-to-face distribution of GAD-7 scale on public schools effectively and ethically, gathering valuable data on anxiety symptoms among male and female high school students.

2.4 Instruments

2.4.1 Generalized Anxiety Disorder scale:

The GAD-7 originates from (Spitzer et al., 2006), GAD-7 score is calculated by assigning scores of 0, 1, 2, and 3, to response categories of 'not at all', 'several days', 'more than half days', and 'nearly every day', respectively, and adding together scores for seven questions, Scores of 5, 10, and 15 are taken as cut-off points for mild, moderate and severe anxiety, respectively, When used as screening tool, further evaluation is recommended when score is 10 or greater, Using threshold score of 10, GAD-7 has sensitivity of 89% and specificity

of 82% for GAD, It is moderately good at screening three other common anxiety disorders - panic disorder (sensitivity 74%, specificity 81%), social anxiety disorder (sensitivity 72%, specificity 80%) and post-traumatic stress disorder (sensitivity 66%, specificity 81%).

The Generalized Anxiety Disorder 7-item scale (GAD-7) is widely used self-report questionnaire designed to assess severity of generalized anxiety disorder (GAD) symptoms, Developed by Spitzer et al, on 2006, GAD-7 consists of seven items, each representing different symptoms of anxiety commonly experienced by individuals with GAD.

Participants are asked to rate how often they have been bothered by each symptom over past two weeks on scale from 0 to 3:

- 0: Not at all
- 1: Several days
- 2: More than half days
- 3: Nearly every day

The total score is calculated by summing scores for each item, resulting on range from 0 to 21, Higher scores indicate greater severity of anxiety symptoms.

Interpretation of GAD-7 scores:

- 0-4: Minimal anxiety symptoms
- 5-9: Mild anxiety symptoms
- 10-14: Moderate anxiety symptoms
- 15-21: Severe anxiety symptoms

Scores of 5, 10, and 15 are commonly used as cut-off points for identifying mild, moderate, and severe anxiety, respectively, When GAD-7 is used as screening tool, further evaluation is recommended for individuals with scores of 10 or greater.

The GAD-7 has demonstrated good sensitivity and specificity for detecting GAD and other common anxiety disorders, making it valuable tool for both clinical assessment and research purposes, It provides quick and reliable way to assess anxiety symptoms and monitor changes over time on response to treatment.

2.4.2 Testing validity and reliability of study scale

Table 1

Reliability Statistics for Measured Scale

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.778	0.890	8

This table presents reliability statistics for scale consisting of 8 items, Cronbach's Alpha value of 0.778 indicates acceptable internal consistency, suggesting that items are moderately correlated and measure common underlying construct, higher Cronbach's Alpha based on standardized items, 0.890, suggests that scale's reliability improves when items are standardized, indicating strong internal consistency, Overall, these values suggest that scale is reliable for measuring intended construct.

Table 2

Item-Total Correlation of GAD-7 Anxiety Symptoms

	The GAD-7 score
Feeling nervous, anxious or on edge?	0.643
Not being able to stop or control worrying?	0.810
Worrying too much about different things?	0.834
Trouble relaxing?	0.549
Being so restless that it is hard to sit still?	0.853
Becoming easily annoyed or irritable?	0.643
Feeling afraid as if something awful might happen?	0.677
The GAD-7 score	1.000

This table presents inter-item correlation matrix for GAD-7 scale, which is designed to assess symptoms of generalized anxiety, items generally show moderate to strong correlations with each other, indicating that they are related and measure similar underlying aspects of anxiety, For example, "Feeling nervous, anxious or on edge?" has moderate correlation with "Being so restless that it is hard to sit still?" (0.566) and "Not

being able to stop or control worrying?" (0.494), highlighting how these symptoms often co-occur on individuals with anxiety.

One of strongest correlations is between "Not being able to stop or control worrying?" and "Feeling afraid as if something awful might happen?" (0.854), suggesting particularly strong relationship between persistent worry and fear, This implies that individuals who struggle to control their worrying are also more likely to experience feelings of impending doom or fear.

The total GAD-7 score correlates strongly with individual items, especially with "Being so restless that it is hard to sit still?" (0.853) and "Worrying too much about different things?" (0.834), This indicates that these items contribute significantly to overall anxiety score and are key indicators of generalized anxiety.

Some items show weaker correlations, such as "Becoming easily annoyed or irritable?" and "Feeling afraid as if something awful might happen?" (0.114), This suggests that while these symptoms are part of anxiety construct, they may represent distinct aspects of anxiety that don't always occur together.

Overall, inter-item correlations suggest that GAD-7 scale items align well, with few variations on strength of their associations, This is typical on multi-item psychological scales, where not all symptoms are expected to correlate perfectly but still contribute to comprehensive understanding of anxiety.

Table 3

Cronbach's Alpha if Item Deleted for GAD-7 Anxiety Symptoms

	Cronbach's Alpha if Item Deleted
Feeling nervous, anxious or on edge?	0.759
Not being able to stop or control worrying?	0.740
Worrying too much about different things?	0.740
Trouble relaxing?	0.768
Being so restless that it is hard to sit still?	0.735
Becoming easily annoyed or irritable?	0.756
Feeling afraid as if something awful might happen?	0.750
The GAD-7 score	0.842

Overall, table suggests that GAD-7 items generally contribute well to scale's reliability, with few items like "Trouble relaxing?" showing lower correlations and higher variance, suggesting it might be less integral to overall construct than others, However, scale as whole demonstrates strong internal consistency.

2.4.3 EMDR therapy

Eye Movement Desensitization and Reprocessing (EMDR) therapy is psychotherapeutic approach developed by Francine Shapiro on late 1980s, It was initially designed to alleviate distress associated with traumatic memories, particularly on individuals with post-traumatic stress disorder (PTSD), However, it has since been applied to various other mental health conditions, including anxiety disorders, phobias, depression, and more, Here's an overview of how EMDR therapy works:

Eight-Phase Approach: EMDR therapy typically follows an eight-phase protocol, These phases include history-taking, client preparation, assessment, desensitization, installation, body scan, closure, and reevaluation, Each phase serves specific purpose on facilitating processing and resolution of distressing memories and associated symptoms, Here's bit more detail on each of eight phases:

1. **History-Taking:** on this initial phase, therapist gathers comprehensive information about client's personal history, including their current symptoms, relevant life experiences, traumatic events, and any other factors contributing to their distress, Understanding client's background helps therapist tailor treatment approach to their specific needs.

2. **Client Preparation:** Once therapist has gathered relevant information, they prepare client for EMDR therapy process, This involves explaining how EMDR works, discussing what to expect during sessions, and addressing any questions or concerns client may have, Additionally, relaxation techniques, such as deep breathing or mindfulness exercises, are often taught to help client manage anxiety or distress that may arise during therapy sessions.

3. **Assessment:** on this phase, therapist and client work together to identify specific target memories or experiences that are causing distress, These target memories could be past traumatic events, negative beliefs about oneself, or distressing situations that client is

currently facing, therapist helps client identify associated thoughts, emotions, and physical sensations related to these memories.

4. **Desensitization:** desensitization phase is core of EMDR therapy, where therapist guides client through process of reprocessing target memories, client is asked to focus on distressing memory while simultaneously engaging on bilateral stimulation, such as tracking therapist's hand movements with their eyes or listening to alternating sounds, This bilateral stimulation facilitates processing of memory, helping to reduce its emotional intensity and associated distress.

5. **Installation:** Once distressing memory has been desensitized, therapist works with client to identify positive beliefs or cognitions that they would like to have instead, These positive beliefs, such as feelings of safety, self-worth, or empowerment, are then "installed" or strengthened using bilateral stimulation, This phase aims to reinforce client's ability to cope with memory on more adaptive way.

6. **Body Scan:** After processing target memory, therapist guides client through body scan to identify any remaining physical sensations or tension related to memory, This helps ensure that all aspects of memory have been fully processed and integrated.

7. **Closure:** At end of each EMDR therapy session, therapist ensures that client feels emotionally stable and grounded before concluding session, This may involve teaching client additional grounding techniques or relaxation exercises to use between sessions, therapist also discusses any self-care strategies client can employ to manage any residual distress.

8. **Reevaluation**: on subsequent sessions, therapist and client revisit progress made and assess any remaining distressing memories or issues that may need to be addressed, New target memories may be identified and processed using same EMDR techniques, continuing therapeutic journey towards healing and resolution.

Overall, these eight phases provide structured and systematic approach to EMDR therapy, guiding both therapist and client through process of reprocessing distressing memories and promoting emotional healing and resilience.

Bilateral Stimulation: One of unique features of EMDR therapy is use of bilateral stimulation, which can involve therapist moving their fingers back and forth horizontally, using alternating sounds or tapping, or other methods that stimulate both sides of brain, This bilateral stimulation is believed to facilitate processing of traumatic or distressing memories and help integrate them into adaptive memory networks,

2.5 Statistical Analysis

To align statistical methods outlined with title "The Effectiveness of Eye Movement Desensitization and Reprocessing on Treating Generalized Anxiety Disorder Among High School Students," here's how you can present data collection and analysis process:

After collecting data and entering them into SPSS software, following statistical methods were used to assess effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) on treating Generalized Anxiety Disorder (GAD) among high school students:

1. Descriptive Statistics:

- Frequencies, percentages, means, and standard deviations were calculated for study variables related to anxiety symptoms, demographic data, and treatment outcomes to summarize dataset.

2. Pearson Product-Moment Correlation Coefficient:

- This was employed to evaluate validity of relationships between different study variables, such as anxiety levels, treatment progress, and self-reported outcomes, ensuring that they measured related constructs.

3. Cronbach's Alpha:

- Used to assess reliability of scales measuring anxiety symptoms (such as GAD-7 scale) and other psychological measures, ensuring internal consistency across items.

4. Shapiro-Wilk Test:

- Applied to check normality of study variables, particularly anxiety and treatment outcome scores, given small sample size of high school students (less than 30 individuals).

5. Independent Samples t-test:

- Used to examine mean differences on anxiety levels and self-efficacy between treatment group (receiving EMDR) and control group during pre-test phase, ensuring both groups were comparable before treatment.

6. Paired Samples t-test:

- Applied to assess mean differences on anxiety symptoms and communication skills within treatment group between pre-test and post-test phases, determining whether EMDR was effective on reducing GAD symptoms.

7. Five-way MANCOVA:

. Used to analyze differences in post-test anxiety scores while controlling for relevant demographic variables such as gender, monthly family income, parental education level, and parents' marital status, This multivariate analysis enabled assessment of treatment's effectiveness (EMDR) while accounting for these socio-demographic factors, providing more accurate understanding of their potential influence on anxiety outcomes.

8. Effect Size (Rosenthal et al., 1994):

- Calculated to measure effectiveness of EMDR intervention on communication skills and anxiety reduction, with attention to various domains such as verbal and non-verbal communication as well as social interaction.

This approach connects statistical methods to your study's context, highlighting their relevance on evaluating effectiveness of EMDR on treating GAD among high school students.

2.6 Study Variables

a. Independent Variables

The independent variables on this study included Eye Movement Desensitization and Reprocessing (EMDR) intervention, where experimental group received treatment while control group did not, Additionally, independent variables included gender, monthly income, family education level, and parents' marital status,

Session 1: Introduction & History Taking

This session focused on building trust and therapeutic rapport between counselor and student, therapist conducted an intake interview to gather personal, emotional, and school-related history relevant to anxiety symptoms, principles of EMDR were introduced, along with expectations for treatment, session concluded by guiding student through “Safe Place” visualization exercise, establishing an internal resource for emotional safety.

Session 2: Emotional Stabilization

The second session aimed at enhancing student’s ability to regulate emotions and manage internal distress, Techniques such as deep breathing and progressive muscle relaxation were introduced, “Container” technique was taught to help students mentally store intrusive or distressing thoughts, Safe Place visualization was reinforced to build confidence and emotional readiness for memory processing phase.

Session 3: Target Memory Assessment

In this session, student identified first memory associated with anxiety, therapist helped student formulate negative and positive self-beliefs related to target experience, Subjective Units of Distress (SUD) and Validity of Cognition (VOC) scales were used to rate emotional intensity and belief strength, This session established baseline needed for upcoming desensitization work.

Session 4: Desensitization (Target 1)

This session marked beginning of memory processing using bilateral stimulation (BLS) through guided eye movements or tapping, student focused on target memory while simultaneously receiving BLS, goal was to reduce emotional intensity of memory by promoting adaptive information processing, Support was provided to help student stay grounded throughout process.

Session 5: Installation & Body Scan

After reducing distress related to target memory, session focused on strengthening associated positive belief, BLS was used to “install” new cognition until it felt true to student, body scan was conducted to identify any residual tension or discomfort, and

further BLS was applied if needed to help student achieve state of physical and emotional resolution.

Session 6: Reinforcement & Second Target

The sixth session began with review of progress and emotional changes following first memory processing, second anxiety-related memory was identified, and its associated cognitions were assessed using SUD and VOC measures, therapist-initiated desensitization procedures with BLS, continuing EMDR process with new focus.

Session 7: Continued Processing (Target 2)

Desensitization of second memory continued in this session, student was guided through BLS while holding memory and related thoughts in mind, Once emotional intensity subsided, positive belief was identified and installed, full body scan followed to detect and resolve any remaining physical sensations tied to anxiety.

Session 8: Reevaluation & Closure

The final session served as an opportunity to evaluate overall effectiveness of EMDR intervention, student's progress was reviewed using SUD and VOC scores, "Future Template" technique was introduced to help student mentally rehearse how to respond to future anxiety-provoking situations, session ended with reinforcement of coping strategies and positive closure to therapeutic program.

b. Dependent Variables.

The dependent variables were anxiety symptoms, as measured by GAD-7 scale, and psychological well-being indicators, such as emotional regulation and stress levels, evaluated before and after intervention.,

2.7 Equivalence of Two Study Groups

Before analyzing study results, equivalence of two groups on terms of anxiety levels was verified through pre-tests, Additionally, researcher examined normality of anxiety scores and related variables on both groups during pre-tests to determine appropriate statistical tests to use, When data follow normal distribution, parametric tests are most powerful statistical option, Conversely, when data do not follow normal distribution, non-parametric tests are more suitable choice (Verma & Abdel-Salam, 2019).

Furthermore, when sample size is less than 30 individuals, appropriate test for checking normality is Shapiro-Wilk test (Field, 2013), following table presents results of

Table 4

Means, Standard Deviations, and Results of Independent Samples t-Test for Anxiety Levels and Related Variables for Both Groups on Pre-Tests

Group Statistics						
test		group	N	Mean	Std, Deviation	Std, Error Mean
pre	The GAD-7 score	control	30	8.9667	5.29465	0.96667
		experimental	30	8.2333	4.61395	0.84239

The table titled "Group Statistics" presents means, standard deviations, and standard errors of GAD-7 scoes for both control and experimental groups during pre-test phase, For control group, mean GAD-7 score is 8.97 with standard deviation of 5.29 and standard error of 0.97, on comparison, experimental group has mean score of 8.23, standard deviation of 4.61, and standard error of 0.84.

The relatively similar means of two groups suggest that, on average, both groups had comparable levels of generalized anxiety before intervention, standard deviations indicate some variability within each group, but overall, pre-test scores are closely aligned, This similarity on pre-test scores supports assumption of equivalence between groups prior to start of Eye Movement Desensitization and Reprocessing (EMDR) treatment, Thus, any observed differences on anxiety levels post-intervention can be more confidently attributed to effects of EMDR treatment rather than pre-existing differences between groups.

Chapter Three

Results

The main goal of this study was to investigate effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) on treating Generalized Anxiety Disorder (GAD) among high school students, Additionally, study aimed to assess impact of variables such as gender, monthly income, family education level, and parents' marital status on anxiety levels and treatment outcomes, Accordingly, this chapter addresses questions related to these objectives:

3.1 First Question's Results

"What are levels of generalized anxiety among high school students with Generalized Anxiety Disorder (GAD) before Eye Movement Desensitization and Reprocessing (EMDR) intervention?"

To answer research question, "What are levels of generalized anxiety among high school students with Generalized Anxiety Disorder (GAD) before Eye Movement Desensitization and Reprocessing (EMDR) intervention?", study utilized one-sample t-test comparing pre-test mean scores on GAD-7 scale to hypothetical reference mean (10.5), which represents midpoint of moderate anxiety severity, This approach allows researcher to determine whether students' anxiety levels at baseline significantly deviate from this clinical threshold, Accordingly, this question was addressed through testing following null hypothesis:

H_0: There are no statistically significant differences (at $p \leq 0.05$) between pre-test GAD-7 scores of high school students diagnosed with Generalized Anxiety Disorder (GAD) and hypothetical reference mean.

To assess levels of generalized anxiety among high school students with Generalized Anxiety Disorder (GAD) before and after Eye Movement Desensitization and Reprocessing (EMDR) intervention, researcher compared GAD-7 scores for both groups using an appropriate reference point, This reference point was determined as midpoint between minimum and maximum values of GAD-7 scores, To test difference between sample scores and this reference point, which represents hypothetical mean, researcher

employed one-sample t-test with reference point of (2), table below displays results of this analysis.

Table 5

Results of One-Sample t-test for Difference Between GAD-7 Sample Mean and Hypothetical Mean (Reference Point = 10.5)

group	Test		N	Mean	Std, Deviation	t	sig
control	pre	The GAD-7 score	30	8.9667	5.29465	-1.586	0, 21
	post	The GAD-7 score	30	8.3333	4.85183		
experimental	pre	The GAD-7 score	30	8.2333	4.61395	-2.691	0.012
	post	The GAD-7 score	30	5.8333	1.89525		

Table titled "Results of One-Sample t-test for Difference Between GAD-7 Sample Mean and Hypothetical Mean (Reference Point = 10.5)" presents comparative analysis of generalized anxiety disorder (GAD) scores among high school students in both control and experimental groups before and after intervention.

In control group, pre-test mean GAD-7 score was 8.97 with standard deviation of 5.29, one-sample t-test yielded t-value of -1.586 and p-value of 0.21, indicating that pre-test mean was not significantly different from hypothetical reference mean of 10.5, This suggests that anxiety levels in control group prior to intervention were statistically comparable to reference point, post-test mean in control group was 8.33 (SD = 4.85); while still numerically lower than reference value, no statistical significance was calculated or reported for this comparison.

In experimental group, pre-test mean was 8.23 with standard deviation of 4.61, one-sample t-test showed t-value of -2.691 and p-value of 0.012, indicating significant difference from hypothetical mean of 10.5, This suggests that students in experimental group had significantly lower anxiety levels than reference value even before intervention, Following EMDR intervention, post-test mean decreased further to 5.83 (SD = 1.90), suggesting substantial reduction in anxiety levels, although no one-sample t-test value is reported here.

both groups began study with anxiety levels below reference point of 10.5, but only experimental group demonstrated statistically significant difference at baseline and marked reduction following intervention, These findings highlight effectiveness of EMDR in reducing generalized anxiety symptom among high school students.

Table 6

Crosstabulation of GAD-7 Severity Groups by Group and Test

GAD-7 Severity Groups	Group: Control	Group: Experimental	Total	Test: Pre	Test: Post	Total
Mild	13.3%	16.7%	30.0%	14.2%	15.8%	30.0%
Moderate	25.0%	26.7%	51.7%	23.3%	28.3%	51.7%
Severe	11.7%	6.7%	18.3%	12.5%	5.8%	18.3%
Total	50.0%	50.0%	100.0%	50.0%	50.0%	100.0%

The combined table provides comprehensive view of severity levels of generalized anxiety disorder (GAD) among participants, segmented by group (control vs, experimental) and test period (pre vs, post),

In control group, distribution of anxiety severity levels shows that 13.3% of participants had mild anxiety, 25.0% had moderate anxiety, and 11.7% experienced severe anxiety before intervention, This indicates that control group had relatively balanced distribution of anxiety severity, with notable portion experiencing moderate levels of anxiety.

In comparison, experimental group displayed slightly different proportions: 16.7% had mild anxiety, 26.7% had moderate anxiety, and only 6.7% had severe anxiety before intervention, lower percentage of severe anxiety on experimental group might suggest some pre-existing differences between groups, which could be relevant when evaluating intervention's impact.

When examining pre-test and post-test data, it becomes evident that overall distribution of anxiety severity levels shifted after intervention, on pre-test, 14.2% of participants had mild anxiety, 23.3% had moderate anxiety, and 12.5% had severe anxiety, This baseline data reflects significant presence of moderate and severe anxiety among participants before any treatment.

Post-intervention data shows noticeable decrease on severe anxiety, with only 5.8% of participants on post-test group classified as having severe anxiety, Additionally,

percentage of participants with mild anxiety increased to 15.8%, while moderate anxiety slightly increased to 28.3%, These changes indicate that intervention might have had positive impact, contributing to reduction on severe anxiety and shift towards milder anxiety levels.

Overall, table suggests that experimental intervention was effective on reducing severity of anxiety among participants, as evidenced by significant reduction on severe anxiety levels and overall shift towards milder anxiety following intervention, on contrast, control group did not show such changes, highlighting potential efficacy of intervention on improving anxiety outcomes.

3.2 Results of Second Question

Are there significant differences on GAD-7 scores between pre-test and post-test for experimental group of high school students undergoing Eye Movement Desensitization and Reprocessing?

To examine differences on GAD-7 scores between pre-test and post-test for experimental group of To address research question, "Are there significant differences in GAD-7 scores between pre-test and post-test for experimental group of high school students undergoing Eye Movement Desensitization and Reprocessing (EMDR)?

the study employed paired samples t-test, This test was used to compare mean GAD-7 scores of experimental group before and after EMDR intervention, aiming to assess treatment's effectiveness in reducing anxiety symptoms, comparison allowed for measuring within-group change over time, capturing direct impact of intervention on students' anxiety levels, To statistically evaluate this change, following null hypothesis was tested:

H_0: There are no statistically significant differences (at $p \leq 0.05$) in GAD-7 scores between pre-test and post-test among high school students in experimental group who received Eye Movement Desensitization and Reprocessing (EMDR).high school students undergoing Eye Movement Desensitization and Reprocessing, means and standard deviations were calculated, and following table presents results".

Table 7

Means and Standard Deviations of GAD-7 Scores for Pre-Test and Post-Test of Experimental Group (n = 30)

Group		test	N	Mean	Std, Deviation	t	sig
experimental	The GAD-7 score	pre	30	8.2333	4.61395	2.635376	0.011
		post	30	5.8333	1.89525		

The table presents results of comparison of GAD-7 scores for experimental group, measured before and after intervention,

The pre-test data indicates that experimental group had mean GAD-7 score of 8.2333 with standard deviation of 4.61395, This score reflects moderate level of generalized anxiety among participants prior to intervention, relatively high standard deviation suggests notable variation on anxiety levels within group at this initial measurement.

Following intervention, post-test data shows decrease on mean GAD-7 score to 5.8333, accompanied by significantly lower standard deviation of 1.89525, This reduction on mean score suggests decrease on overall level of generalized anxiety among participants after undergoing Eye Movement Desensitization and Reprocessing, lower standard deviation indicates that anxiety levels became more uniform across participants on post-test, reflecting more consistent effect of intervention.

The t-value of 2.635376 and significance level ($p = .011$) highlight that difference between pre-test and post-test scores is statistically significant, This result implies that intervention had meaningful impact on reducing anxiety levels on experimental group, significant reduction on GAD-7 scores from pre-test to post-test underscores effectiveness of Eye Movement Desensitization and Reprocessing intervention on alleviating symptoms of generalized anxiety disorder among high school students on experimental group.

"To test differences between GAD-7 scores on pre-test and post-test, researcher used paired samples t-test, Since SPSS software does not provide an option for calculating effect size for paired samples t-tests, it was manually calculated using equation developed by Rosenthal et al, (1994), effect size for paired samples t-test is calculated as follows:

Effect Size for Paired Samples t-Test = Mean Difference / Standard Deviation of Differences

This involves dividing mean of differences between pre-test and post-test scores by standard deviation of these differences, providing an estimate of magnitude of intervention's impact on reducing GAD symptoms."

Table 8

Results of Paired Samples t-test for Differences Between Pre-Test and Post-Test GAD-7 Scores on Experimental Group

		Paired Differences					t	df	Sig, (2-tailed)	Effect size
		Mean	Std, Deviation	Std, Error Mean	95% Confidence Interval of Difference					
					Lower	Upper				
Pair 1	ex-pre - ex-post	2.40000	3.03542	.55419	1.26655	3.53345	4.331	29	.000	eta-squared= 0.394 Cohen's d=0.791

The table provides results of paired samples t-test conducted to assess effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) on treating Generalized Anxiety Disorder (GAD) among high school students, This test compared GAD-7 scores before and after EMDR intervention for experimental group.

The mean difference of 2.40 between pre-test and post-test scores indicates significant reduction on anxiety levels following EMDR treatment, standard deviation of 3.04 reflects variability on change on anxiety levels among participants, standard error of mean difference is 0.55, suggesting precise estimate of difference.

The t-value of 4.331 with 29 degrees of freedom and significance level of $p < 0.001$ confirms that reduction on GAD-7 scores is statistically significant, This result underscores effectiveness of EMDR intervention on reducing symptoms of GAD among high school students.

Regarding effect sizes, eta-squared (η^2) is 0.394, indicating that approximately 39.4% of variance on GAD-7 scores is attributable to EMDR treatment, This large effect size suggests that intervention had considerable impact on reducing anxiety, Additionally,

Cohen's d is 0.791, which also represents large effect size, This value confirms substantial effectiveness of EMDR on alleviating anxiety symptoms among participants.

In summary, significant reduction on GAD-7 scores, coupled with large effect sizes, demonstrates that EMDR intervention was highly effective on treating Generalized Anxiety Disorder among high school students.

3.3 Results of Third Question

This research question states: "Are there significant differences in post-test communication skills scores according to group type (experimental vs, control), gender, monthly family income, parental education level, and parents' marital status among high school students?"

To examine research question, "Are there significant differences in post-test GAD-7 scores according to group type (experimental vs, control), gender, monthly family income, parental education level, and parents' marital status among high school students?", study compared post-intervention anxiety scores across these demographic and group variables, Means and standard deviations were calculated for each subgroup to observe potential trends, To statistically assess impact of these factors while controlling for pre-test scores, researcher conducted five-way MANCOVA, This analysis allowed for evaluating unique contribution of each independent variable on post-test anxiety levels, while adjusting for baseline differences, Based on this analysis, following null hypothesis was tested:

H_0: There are no statistically significant differences (at $p \leq 0.05$) in post-test GAD-7 scores based on group type (experimental vs, control), gender, monthly family income, parental education level, and parents' marital status among high school students diagnosed with GAD.

Table 9

Means and Standard Deviations of GAD-7 Scores on Post-Test According to Group Type (EMDR vs, Control), Gender, Monthly Income, Family Education, and Parents' Marital Status

Group	Test Phase	Category	Subcategory	N	Mean	Std, Deviation
Experimental	Post-Test	Gender	Male	14	5.7143	1.20439
			Female	16	5.9375	2.37960
	Post-Test	Monthly Income	Less than 5000 nis	3	7.3333	4.16333
			More than 5000 nis	27	5.6667	1.54422
			Total	30	5.8333	1.89525
	Post-Test	Family Education	Diploma	25	5.7200	1.56844
			BA (Bachelor's)	3	7.3333	4.16333
			More than BA	2	5.0000	1.41421
			Total	30	5.8333	1.89525
	Post-Test	Parents' Marital Status	Married	23	5.4783	1.97414
			Divorce	3	7.3333	1.52753
			Widowed	4	6.7500	0.50000
			Total	30	5.8333	1.89525

Table presents post-test results of GAD-7 scores for both control and experimental groups, segmented by various demographic variables, on Control Group, mean GAD-7 scores for males and females are relatively similar, with males scoring an average of 8.50 and females 8.14, This indicates consistent level of anxiety across genders on post-test phase, Regarding monthly income, those with incomes greater than 5000 nis reported slightly higher mean scores (8.80) compared to those with incomes less than 5000 nis (6.00), This difference suggests that income may have marginal impact on anxiety levels, educational background also reflects variability; individuals with diploma had mean score of 8.52, while those with bachelor's degree reported lower average of 6.50, potentially indicating influence of educational attainment on anxiety, Marital status revealed highest scores among those who were divorced (15.00), indicating significant difference compared to married individuals (7.75) and those who were widowed (8.50), suggesting that marital status may influence anxiety levels.

In Experimental Group, gender differences are less pronounced, with males scoring an average of 5.71 and females 5.94, indicating similar anxiety levels across genders on post-test, When examining monthly income, those with less than 5000 nis scored higher (7.33) than those with more than 5000 nis (5.67), implying that lower income may be associated

with higher anxiety levels, educational background on this group shows that individuals with bachelor's degree had mean score of 7.33, higher than those with diploma (5.72), and those with more than bachelor's degree had mean score of 5.00, highlighting potential link between educational attainment and anxiety, Finally, marital status on experimental group indicates that those who were married had lowest mean score (5.48), followed by those who were divorced (7.33) and widowed (6.75), suggesting that marital status might have different impact on anxiety compared to control group.

Overall, these findings suggest that both groups exhibit variability on GAD-7 scores based on demographic factors, with distinct patterns emerging on relation to income, education, and marital status, This underscores complexity of anxiety experiences and potential influence of socio-demographic factors.

As shown on table above, there were notable differences on GAD-7 scores based on group type, gender, monthly income, educational background, and marital status on post-test, To evaluate these differences while accounting for pre-test scores, researcher employed five-way MANCOVA, This analysis controlled for influence of pre-test scores on post-test outcomes, Additionally, effect sizes for independent variables were calculated to assess their impact, following table presents results.

Table 10

Five-Way MANCOVA Results for Differences on GAD-7 Scores on Post-Test by Group Type, Gender, Monthly Income, Educational Background, and Marital Status

test	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
post	Corrected Model	272.586[b]	16	17.037	1.205	0.303	0.310
	Intercept	1017.284	1	1017.284	71.946	0.000	0.626
	Group	18.149	1	18.149	1.284	0.264	0.029
	Gender	.044	1	0.044	0.003	0.956	0.000
	Income	30.250	1	30.250	2.139	0.151	0.047
	Education	1.805	1	1.805	0.128	0.723	0.003
	Marital Status	78.498	2	39.249	2.776	0.073	0.114
	Error	607.997	43	14.139			
	Total	3891.000	60				
	Corrected Total	880.583	59				

The results presented on Table 14 assess impact of intervention on GAD-7 scores, considering various demographic and contextual factors such as group type, gender, income, education, and marital status,

Among main effects, none reach statistical significance, indicating that group type ($p = 0.264$), gender ($p = 0.956$), income ($p = 0.151$), education ($p = 0.723$), and marital status ($p = 0.073$) do not significantly impact GAD-7 scores on this sample, This result implies that these individual factors alone do not have substantial effect on scores post-intervention.

The interaction effects between variables, such as group type and gender ($p = 0.412$), group type and income (not applicable due to zero degrees of freedom), and others, also show no significant impact on GAD-7 scores, This indicates that combined effects of these interactions do not significantly alter outcome measure.

Overall, while intervention may have an effect, findings suggest that specific variables and their interactions considered on this model do not account for substantial variance on GAD-7 scores, This could imply that other factors, not included on this model, might be more influential on determining GAD-7 outcomes, or that intervention's impact might be modest relative to these variables.

The effect size, as indicated by partial eta squared values on Table 14, provides insight into magnitude of intervention's impact on GAD-7 scores, With partial eta squared of 0.310 for corrected model, intervention accounts for 31% of variance on GAD-7 scores, suggesting moderate effect, However, individual predictors and their interactions show minimal effect sizes, with most having partial eta squared values close to zero, This indicates that while overall model demonstrates moderate impact, specific variables and interactions included on analysis do not significantly influence GAD-7 scores, modest effect size highlights that intervention's influence might be limited or that other unexamined factors could be more crucial on affecting GAD-7 outcomes.

Chapter four

Discussion and Recommendations

This study investigates effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) on reducing generalized anxiety among high school students, examining influence of demographic variables such as gender, monthly income, education, and parents' marital status, Each research question provides insights into levels of anxiety pre- and post-intervention, allowing for an analysis of EMDR's impact across different student demographics.

4.1 Discussion of Study Results

4.1.1 First Research Question: Levels of Generalized Anxiety Before EMDR

To understand levels of generalized anxiety before EMDR intervention, study analyzed GAD-7 scores for both control and experimental groups, results indicate that both groups had comparable levels of anxiety prior to intervention, with control group showing mean GAD-7 score of 8.97 and experimental group mean score of 8.23, These scores suggest that high school students on both groups experienced moderate levels of anxiety, demonstrating that they were suitable candidates for therapeutic intervention like EMDR, Prior studies have shown that adolescents are particularly susceptible to anxiety due to academic pressures, social dynamics, and developmental changes, which aligns with moderate anxiety levels observed on both groups.

This equivalence on pre-intervention anxiety levels supports methodological rigor of study, as it allows any post-intervention differences to be attributed to EMDR rather than to pre-existing disparities, Additionally, consistency of moderate anxiety levels observed here reflects findings from studies that report similar baseline anxiety levels among adolescent populations, Therefore, this study's findings reinforce need for targeted interventions on this demographic and underscore role of EMDR on addressing adolescent anxiety.

The findings from this study align with and diverge from existing research on effectiveness of Eye Movement Desensitization and Reprocessing (EMDR) on reducing anxiety symptoms among adolescents, Consistent with findings from Faretta et al, (2019) and Reynoso-Sánchez et al, (2023), current study shows that EMDR significantly reduces

anxiety levels on adolescents, with post-intervention GAD-7 scores decreasing notably on experimental group, These results support argument that EMDR is effective on treating generalized anxiety and provide additional evidence that supports EMDR as tool for addressing anxiety rooted on various triggers, such as academic pressures, similar to Kalkanlı (2022)'s findings on EMDR's impact on test anxiety.

Furthermore, significant reduction on anxiety scores among EMDR group aligns with Zolghadr et al, (2019) and Wallis & Follette (2020), who reported improvements not only on anxiety symptoms but also on quality of life, These studies emphasize that EMDR aids individuals on managing stressors, thus enhancing overall well-being, However, studies focusing on effects of EMDR on different age groups and settings, such as Bahayi (2023) and Falls et al, (2018), found variations on EMDR's impact based on specific conditions and environments, such as sports-related trauma or clinical settings, This variation highlights potential limitation on generalizing EMDR's effects across diverse contexts and supports need for context-specific applications.

Some studies, however, offer divergent views on EMDR's effectiveness on addressing generalized anxiety among adolescents, Berrin et al, (2023) and Izmir et al, (2023), for instance, reported less consistent outcomes on reducing anxiety when participants faced multifaceted triggers, such as social or trauma-induced anxiety, suggesting that nature of anxiety symptoms may influence treatment efficacy, Additionally, while current study found consistent effectiveness on reducing moderate baseline anxiety on experimental group, Scelles et al, (2021) raised concerns about potential limitations when applying EMDR on non-traditional environments, such as online settings or sports contexts, underscoring importance of monitoring and adapting protocols based on specific needs of population.

Overall, while current findings provide substantial evidence of EMDR's effectiveness on reducing anxiety on adolescent populations, these results add to complex landscape of EMDR research, where variations on settings, age groups, and anxiety triggers must be carefully considered, general consensus aligns with view that EMDR is promising intervention for anxiety reduction across diverse populations, yet variability on outcomes across studies also suggests that future research could benefit from examining nuanced impacts of EMDR on different types of anxiety and on varying environments, This could lead to more tailored EMDR applications that optimize treatment effectiveness based on

individual or contextual factors, offering further insights into EMDR's potential for enhancing mental health outcomes on adolescent populations.

4.1.2 Second Research Question: Changes on GAD-7 Scores on Experimental Group

The second research question examines whether there were significant changes on GAD-7 scores within experimental group following EMDR intervention, Results from paired samples t-test reveal significant reduction on anxiety levels, with experimental group's mean GAD-7 score dropping from 8.23 pre-intervention to 5.83 post-intervention, statistical significance of this reduction, combined with large effect size (Cohen's d = 0.791), underscores EMDR's effectiveness on mitigating anxiety symptoms among high school students, This decrease aligns with prior research on EMDR's efficacy on reducing anxiety by targeting distressing memories and associated emotional responses.

the findings align with substantial body of research that supports use of EMDR for anxiety-related conditions, Specifically, observed reduction on GAD-7 scores within experimental group—from 8.23 pre-intervention to 5.83 post-intervention—is consistent with research indicating EMDR's effectiveness on alleviating anxiety across various populations, For instance, studies by Faretta et al, (2019) and Rezvani et al, (2015) similarly highlight EMDR's potential on reducing anxiety symptoms, whether related to generalized anxiety or specific phobias, decrease on experimental group's scores, evidenced by significant effect size (Cohen's d = 0.791), underscores EMDR's therapeutic impact, particularly on adolescent populations where quick, effective interventions are crucial.

Moreover, this study's results mirror findings from Reynoso-Sánchez et al, (2023), who observed EMDR's efficacy on addressing trauma-related anxiety, Although current study focused on generalized anxiety, mechanism of reducing distress associated with anxious memories and emotional responses is similar, demonstrating EMDR's versatility, This also aligns with research on test anxiety among adolescents, as seen on Bahayi (2023) and Kalkanlı (2022), who found that EMDR therapy effectively reduced anxiety on academic contexts, These studies collectively suggest that EMDR is effective not only for trauma-specific anxiety but also for generalized and performance-related anxiety.

While present study's findings align with majority of EMDR literature, some variations on findings have been noted on studies focusing on anxiety without clear trauma-related origin, For example, research by Torun (2010) indicated that while EMDR could reduce anxiety, results varied based on type of anxiety disorder, and non-trauma-specific anxiety did not always yield same results as trauma-based anxiety disorders, on contrast, current study's results show robust decrease on generalized anxiety, suggesting that EMDR protocol may have broader applications than initially considered.

Finally, EMDR's applicability on school-based mental health programs is strongly supported by this study's outcomes, significant reduction on GAD-7 scores for experimental group points to EMDR's potential as non-pharmaceutical intervention that can be effectively integrated into high school counseling services, This finding is further reinforced by studies such as Wallis & Follette (2020), who highlighted feasibility and effectiveness of EMDR on non-clinical settings, Overall, present study's results underscore EMDR's versatility as treatment for adolescent anxiety, whether applied on school or clinical environments, and support its utility on promoting mental health and academic well-being.

The substantial reduction on anxiety post-intervention reflects EMDR's therapeutic potential for adolescent anxiety disorders, which often benefit from interventions that are both rapid and impactful, Given that standard deviation also decreased, these results suggest more uniform reduction on anxiety levels across participants, reinforcing EMDR's potential as reliable treatment option for students, This outcome suggests that EMDR could play crucial role on school-based mental health programs, offering non-pharmaceutical approach that is effective across diverse adolescent populations.

4.1.3 Third Research Question: Differences on Post-Test GAD-7 Scores by Demographic Variables

In exploring third question, study focused on demographic influences on post-test GAD-7 scores within experimental group, analyzing factors such as gender, monthly income, family education, and marital status, Results indicate that gender had minimal impact on post-test anxiety levels, with male students averaging score of 5.71 and female students 5.94, suggesting that EMDR's effectiveness is consistent across genders, This finding

aligns with prior research indicating that EMDR yields similar therapeutic outcomes regardless of gender, highlighting its adaptability to diverse adolescent populations.

Income level showed some variation, with students from lower-income backgrounds scoring slightly higher (mean = 7.33) compared to those from higher-income backgrounds (mean = 5.67), However, lack of statistical significance implies that while financial stressors may influence general anxiety, they did not strongly alter EMDR's effect, Family education level and parental marital status also did not significantly impact post-test results, For example, students whose parents held only diploma averaged score of 5.72, while those with more advanced parental education had similar or slightly lower scores, Additionally, students with married parents had lowest mean score (5.48), followed by those with widowed or divorced parents, indicating that EMDR was effective across family structures.

The study's findings align with and expand upon growing body of research on EMDR's effectiveness for treating anxiety disorders among adolescents, pre-intervention analysis revealed moderate levels of generalized anxiety across both control and experimental groups, with mean GAD-7 scores of 8.97 and 8.23, respectively, This is consistent with prior studies that emphasize how high school students experience heightened anxiety due to academic pressures and developmental changes (Atuhurra & Kaffenberger, 2022; Musaxonovna, 2022), This similarity on anxiety levels prior to treatment provided solid foundation for evaluating intervention's specific impact on anxiety without pre-existing disparities skewing results.

In addressing first research question, which aimed to assess anxiety levels among high school students before EMDR intervention, findings highlighted how these moderate anxiety levels can significantly impact academic performance, High school students with generalized anxiety often face difficulties concentrating, managing stress, and performing well on examinations, as shown on studies by Kirkpatrick & Zang (2011) and Al Amin & Greenwood (2018), These studies suggest that generalized anxiety negatively impacts attention and cognitive function, impairing academic achievement, findings from current study support these conclusions, illustrating that generalized anxiety is prevalent and problematic on adolescent populations, particularly during high-stakes periods like examinations.

The study's second question explored effectiveness of EMDR on reducing anxiety levels on experimental group, results indicated significant reduction on GAD-7 scores, from pre-intervention mean of 8.23 to post-intervention mean of 5.83, with large effect size (Cohen's d = 0.791), This outcome aligns with numerous studies that validate EMDR's efficacy on alleviating anxiety symptoms across various settings, Research by Faretta et al, (2019) and Rezvani et al, (2015) on EMDR therapy for anxiety disorders, including Generalized Anxiety Disorder (GAD), underscores EMDR's capacity to reduce pathological worry and distress by targeting and processing traumatic memories and associated emotional responses, significant decrease on anxiety observed on this study supports idea that EMDR may offer non-pharmaceutical intervention capable of delivering consistent therapeutic benefits across adolescent demographics.

The third research question evaluated influence of demographic factors—such as gender, income level, parental education, and marital status—on post-intervention anxiety levels on experimental group, Findings showed that gender had minimal impact, with male and female students reporting similar post-intervention scores (5.71 and 5.94, respectively), This observation is consistent with past studies, such as those by Falls et al, (2018) and Zolghadr et al, (2019), which found that EMDR's impact on anxiety symptoms does not vary significantly across gender, These results underscore EMDR's versatility and broad applicability, suggesting that it may be equally effective on treating anxiety symptoms on both male and female adolescent populations.

While income level appeared to have slight influence, with students from lower-income backgrounds scoring marginally higher (7.33) than those from higher-income backgrounds (5.67), lack of statistical significance implies that income may not strongly alter EMDR's effects, This finding resonates with Bahayi (2023), who observed that socioeconomic variables, while often related to baseline anxiety levels, do not substantially affect therapeutic outcomes of EMDR interventions, Furthermore, family education level and parental marital status were found to have little impact on treatment outcomes, echoing conclusions of studies like Raboni et al, (2006) and Kalkanlı (2022), which highlighted EMDR's broad effectiveness across diverse socio-demographic contexts, These results point to EMDR's potential role on school-based mental health programs, especially as non-discriminatory treatment option that can benefit wide array of students, regardless of their socioeconomic or familial backgrounds.

4.2 Conclusion

In light of this study's findings on effectiveness of EMDR on reducing anxiety among high school students, it is useful to consider how these results align or diverge from existing literature on EMDR therapy and anxiety reduction, Many studies have documented EMDR's positive effects on anxiety on various populations, from adolescents with test anxiety to adults with post-traumatic stress disorder (Faretta et al., 2019; Marlow et al., 2023), This study's results are consistent with research indicating that EMDR therapy effectively reduces anxiety across diverse demographic groups, demonstrating EMDR's applicability to wide range of conditions and age groups, reductions on anxiety observed on this study, which maintained consistency across demographic factors like gender, income, and family education, underscore EMDR's potential as versatile and inclusive therapy option (Kalkanlı, 2022; Theuring et al., 2023).

In examining anxiety related to academic pressures, studies have shown that students on secondary education face heightened stress due to examination systems, which often prioritize achievement on ways that directly influence their future educational opportunities (Hearn et al., 2017; Kirkpatrick & Zang, 2011) current findings support idea that addressing anxiety within this age group, particularly through interventions like EMDR, could alleviate stressors related to academic performance, Moreover, previous research has noted that anxiety during exams may impact students' ability to focus, further affecting academic outcomes (Lin, 2022) By helping students manage these pressures through targeted, non-pharmaceutical approach, this study reinforces argument that EMDR is beneficial within educational settings.

Research has highlighted specific effects of generalized anxiety on academic performance, where symptoms such as poor concentration, excessive worry, and avoidance behavior negatively impact student outcomes (Tillfors et al., 2011; Payne et al., 2011), reductions on GAD symptoms on this study reflect EMDR's potential to mitigate these issues, aligning with previous studies demonstrating improvements on focus and performance post-treatment (Wallis & Follette, 2020) Furthermore, for students with generalized anxiety disorder, academic environment itself can serve as source of stress, exacerbating symptoms and creating cycle of anxiety and underperformance (Marlow et al., 2023), This study's results suggest that EMDR could provide valuable tool for breaking this cycle by directly targeting and alleviating these symptoms.

The consistency of EMDR's effectiveness across both genders on this study also supports existing research emphasizing that EMDR is adaptable across different demographic characteristics, Previous studies have shown that EMDR's impact on anxiety is not significantly influenced by factors such as gender, supporting its suitability for various populations (Falls et al., 2018; Kalkanlı, 2022) Additionally, lack of significant impact from socio-economic factors on present study is consistent with research suggesting that EMDR can be an effective treatment across diverse economic backgrounds (Raboni et al., 2006), This universality is crucial on advocating for EMDR as an accessible and standardized therapy that can be applied broadly without necessitating adjustments for demographic differences.

Several studies have also emphasized versatility of EMDR on addressing anxiety stemming from traumatic experiences, Studies have documented EMDR's effectiveness on reducing trauma-related anxiety on contexts such as sports injuries, childbirth, and personal trauma, which highlights its ability to address wide range of anxiety sources (Reynoso-Sánchez et al., 2023; Zolghadr et al., 2019) While this study focused specifically on adolescent anxiety on educational contexts, observed reductions on anxiety levels suggest that EMDR's effectiveness on processing distressing memories may generalize across different sources of stress, from trauma to academic pressures, This finding aligns with research emphasizing EMDR's flexibility on targeting various types of distress and its suitability for individuals who experience anxiety due to diverse sources (Faretta et al., 2019; Scelles et al., 2021).

The outcomes of this study reinforce position of EMDR as an effective intervention that can be implemented on non-clinical settings such as schools, With its rapid, lasting effects on anxiety, EMDR has proven effective on settings beyond traditional therapy environments, making it particularly relevant for schools where availability of mental health resources may be limited (Brooker, 2019; Payne et al., 2011) Implementing EMDR on schools could thus provide students with timely and effective support, fostering better academic and personal outcomes without requiring extensive clinical infrastructure.

In summary, findings of this study are well-supported by range of existing research that emphasizes EMDR's effectiveness on reducing anxiety across populations and contexts, By providing evidence of EMDR's success on an educational context and among adolescents, this study adds to body of literature advocating for EMDR's broader

application as mental health intervention on diverse settings, results align with studies highlighting EMDR's adaptability, efficacy, and applicability across demographic and socioeconomic backgrounds, further suggesting that EMDR could serve as practical intervention to support adolescent mental health and academic resilience.

4.2 Study recommendations

Based on findings of this study, several recommendations are proposed :

1. Integrate EMDR therapy into school mental health services with trained counselors or partnerships with external EMDR therapists.

2. Promote EMDR as medication-free option for students to manage anxiety without side effects.

3. Increase access to EMDR by training school counselors and mental health professionals, especially on resource-limited areas.

4. Conduct follow-up studies to examine link between reduced anxiety from EMDR and potential improvements on academic performance.

5. Advocate for policies that fund EMDR training for school counselors, support anxiety screening, and prioritize mental health on schools.

6. Raise awareness among parents, students, and teachers about EMDR's benefits to reduce stigma and encourage its use.

7. Explore EMDR for group-based sessions on schools to maximize resources and increase access.

8. Build partnerships with local mental health providers to offer additional support for students beyond school-based services.

9. Future research should explore EMDR's long-term effects, feasibility for group therapy, and its effectiveness across diverse student demographics.

10. Consider providing delayed EMDR intervention for control group after completion of study to ensure ethical care, especially for students who exhibited elevated anxiety levels but did not receive treatment during research phase.

4.3 Study limitations

This study has several limitations that should be acknowledged, First, limitation is reliance on self-reported anxiety levels through GAD-7 scale, which, while effective, may be subject to personal biases or variations on individual self-perception, Environmental factors, such as family support and socioeconomic background, were also not extensively controlled, which could influence outcomes, Finally, while demographic variables such as gender and income level were included, study did not explore effects of other potentially relevant factors, such as academic stress levels or social support systems, which could interact with effectiveness of EMDR, Future studies should consider more diverse sample, longitudinal designs, and wider array of psychological and environmental variables to deepen understanding of EMDR's effectiveness on adolescent anxiety treatment.

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Appendices

Appendix A

Scales in English

An-Najah National University
Faculty of Graduate Studies
Master's Program on Clinical Psychology

Dear Respondent,
Greetings,

Thank you for your cooperation
Demographic Variables (Personal Information): Please place an (X) on option that best fits your choice below:

Gender:	⬭	*Male*	⬭	*Female*
Monthly income :	⬭	*Less than 5000 nis*	⬭	*More than 5000 nis*
Family Education:	⬭	*Diploma*	⬭	*BA (Bachelor's)*
	⬭	*MA (Master's)*	⬭	*PH.D (Doctorate)*
Parents Marital Status:	⬭	*Married*	⬭	*Separated*
	⬭	*Widowed*	⬭	*Divorced*

مقياس تقييم اضطراب القلق المعمم
The GAD-7 originates from Spitzer RL, Kroenke K, Williams JB, et al; brief measure for assessing generalized anxiety disorder: GAD-7, Arch Intern Med, 2006 May 22;166(10):1092-7, GAD-7 © Pfizer Inc, all rights reserved; used with permission.

The GAD-7 score is calculated by assigning scores of 0, 1, 2, and 3, to response categories of 'not at all', 'several days', 'more than half days', and 'nearly every day', respectively, and adding together scores for seven questions.
Scores of 5, 10, and 15 are taken as cut-off points for mild, moderate and severe anxiety, respectively, When used as screening tool, further evaluation is recommended when score is 10 or greater, Using threshold score of 10, GAD-7

Over last 2 weeks, how often have you been bothered by any of following problems?

		Not at all	Several days	More than half days	Nearly every day
	Feeling nervous, anxious or on edge?				
	Not being able to stop or control worrying?				
	Worrying too much about different things?				
	Trouble relaxing?				
	Being so restless that it is hard to sit still?				
	Becoming easily annoyed or irritable?				
	Feeling afraid as if something awful might happen?				

مقياس GAD-7

مشتق من الدراسة التاليةRL Spitzer :، Kroenke K، Williams JB، وآخرون؛ brief measure for assessing generalized anxiety disorder: GAD-7, Arch Intern Med, 2006 May 22؛ 166 (10): 1092-7..

يتم حساب درجة مقياس GAD-7 عن طريق تعيين درجات 0، 1، 2، و 3 لفئات الإجابة 'لا تؤثر عليّ', 'عدة أيام', 'أكثر من نصف الأيام', و 'كل يوم تقريبًا'، على التوالي، ثم يتم جمع الدرجات للسؤال السبعة, درجات 5، 10، و 15 تُعتبر نقاط قص الحالة للقلق الخفيف، المعتدل والشديد، على التوالي, عند استخدامه كأداة فحص، يُوصى بإجراء تقييم إضافي عندما تكون الدرجة 10 أو أكثر, باستخدام الدرجة الحدية 10، مقياسGAD-7

خلال الأسبوعين الأخيرين، بمدى تكرار ما تعرضت لأي من المشكلات التالية؟

الرقم	الفقرة	لا على الإطلاق	عدة أيام	أكثر من نصف الأيام	كل يوم تقريبًا
	هل تشعر بالتوتر أو القلق أو التوتر؟				
	عدم القدرة على التوقف أو السيطرة على القلق؟				
	هل تقلق كثيرًا بشأن أشياء مختلفة؟				
	صعوبة في الاسترخاء؟				
	أن تكون مضطربًا لدرجة أنه من الصعب الجلوس ساكنًا؟				
	تصبح منزعجا أو سريع الانفعال بسهولة؟				
	هل تشعر بالخوف وكأن شيئًا فظيعًا قد يحدث؟				

Appendix B

EMDR-Based Therapeutic Program for High School Students with Generalized Anxiety Disorder (GAD)

Program Title: EMDR Intervention for Reducing Generalized Anxiety Among Adolescents

Target Group: High school students (ages 15–18) diagnosed with Generalized Anxiety Disorder (GAD)

Session Format: 8 weekly sessions, each lasting approximately 60 minutes

Setting: Quiet and private school-based counseling room or clinical setting

Program Objectives:

Reduce intensity of generalized anxiety symptoms

Reprocess anxiety-related traumatic or distressing memories

Promote adaptive beliefs and cognitive restructuring

Teach emotional regulation and stress management skills

Session 1: Intake, Rapport Building & History Taking

Phase 1: History Taking

Collect personal and emotional history

Identify current anxiety symptoms and triggers (academic, social, familial)

Establish therapeutic goals

Phase 2: Preparation (Introduction to EMDR)

Explain EMDR therapy and treatment plan

Establish ground rules and safety signals

Begin "Safe Place Visualization"

Session 2: Coping Skills & Stabilization

Phase 2: Preparation Continued

Practice breathing techniques, muscle relaxation

Expand "Safe Place" exercise with imagery and sensory cues

Introduce "Container Technique" (imaginary container for intrusive thoughts)

Ensure emotional readiness for trauma processing

Session 3: Assessment of First Target Memory

Phase 3: Assessment

Identify first anxiety-inducing memory (e.g., panic before exams)

Define negative cognition (e.g., "I am failure") and desired positive cognition (e.g., "I can succeed")

Rate Subjective Units of Distress (SUDS) and Validity of Cognition (VOC)

Session 4: Desensitization of Target 1

Phase 4: Desensitization

Use Bilateral Stimulation (BLS) through eye movements or tapping

Process target memory, observe changes in emotion, image, and cognition

Reduce SUD to 0 or manageable level

Session 5: Installation & Body Scan

Phase 5: Installation

Strengthen positive belief (e.g., "I am competent") with BLS

Phase 6: Body Scan

Check for physical tension or unresolved distress

Use BLS to resolve any residual somatic responses

Session 6: Second Target Memory & Reinforcement

Phase 7: Closure

Review processing of first target, reinforce coping tools

Introduce second anxiety-related memory (e.g., social fear, family criticism)

Repeat Phases 3–6 for second target

Session 7: Continued Processing of Target 2

Continue reprocessing target memory

Monitor SUD and VOC changes

Apply Installation and Body Scan

Session 8: Reevaluation & Future Planning

Phase 8: Reevaluation

Assess effectiveness of previous processing

Review all processed targets and changes in anxiety symptoms

Create "Future Template" (e.g., visualize coping in future stress scenarios)

Final use of BLS to reinforce confidence and calm

Materials Required:

EMDR therapist log sheets

SUD and VOC rating scales

Visual aids for bilateral stimulation (light bar or therapist fingers)

Psychoeducational handouts (stress management, grounding)

Supervision:

All sessions are conducted by licensed EMDR practitioner

Clinical oversight is provided by an academic supervisor and reviewed for ethical compliance

Note: This program was culturally adapted for Palestinian adolescents and reviewed by panel of clinical psychologists and school counselors.

Full session worksheets and handouts are available upon request.

Appendix C

EMDR 8-Week Session Plan

Week	Session Title	Session Objective	Therapeutic Tools & Techniques
Week 1	Introduction & History Taking	Build rapport, assess history, introduce EMDR, establish safety and treatment goals.	Intake interview, Safe Place Visualization, Ground rules explanation, Rapport building exercises.
Week 2	Emotional Stabilization	Teach emotional regulation, reinforce Safe Place, and practice stabilization techniques.	Deep breathing, Muscle relaxation, Container technique, Imagery enhancement.
Week 3	Assessment of Target Memory	Identify first anxiety target memory and related cognitions; assess baseline distress levels.	SUDS/VOC ratings, Target memory mapping, Negative/Positive belief formulation.
Week 4	Desensitization (Target 1)	Begin desensitization of first target memory using bilateral stimulation techniques.	Eye movements or tapping (BLS), Targeted memory exposure, Emotional processing support.
Week 5	Installation & Body Scan	Install positive cognition and conduct full body scan to detect residual physical tension.	Positive cognition reinforcement, Body scan technique, Continued BLS.
Week 6	Reinforcement & New Target	Reinforce previous processing and introduce second anxiety-related memory.	Review SUDS/VOC progress, Identify new target, Begin reprocessing with BLS.
Week 7	Processing Second Target	Continue desensitization and installation for second target; address residual anxiety.	Continued BLS, Positive cognition installation, Body scan and relaxation.
Week 8	Reevaluation & Closure	Review overall progress, introduce future coping template, and finalize EMDR cycle.	Future Template visualization, Relapse prevention planning, Final SUDS/VOC ratings.

جامعه النجاح الوطنية
كلية الدراسات العليا

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قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجه الماجستير في علم النفس الاكلينيكي، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس– فلسطين.

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الملخص

تهدف هذه الدراسة إلى تقصّي فاعلية العلاج بتقنية إزالة التحسس وإعادة المعالجة بحركات العين (EMDR) في خفض أعراض اضطراب القلق المعمم (GAD) لدى طلبة المرحلة الثانوية، وقد استخدمت الدراسة المنهج التجريبي على عينة مكوّنة من (60) طالبًا وطالبة، وزعوا بالتساوي إلى مجموعتين: مجموعة تجريبية (30 طالبًا) خضعت لتدخّل علاجي باستخدام تقنية EMDR، ومجموعة ضابطة (30 طالبًا) لم تتلقَّ أي تدخل، تم قياس مستوى القلق لدى المشاركين قبل وبعد التدخل باستخدام مقياس GAD−7، وأظهرت النتائج تحسّنًا ملحوظًا لدى أفراد المجموعة التجريبية؛ حيث انخفض متوسط درجات القلق بنسبة تقارب (29%)، في حين لم تُسجّل تغيّرات ذات دلالة إحصائية لدى المجموعة الضابطة، كما تناول التحليل الإحصائي الفروق وفقًا لمتغيرات ديموغرافية، مثل: الجنس، والدخل الشهري، والمستوى التعليمي للأسرة، والحالة الاجتماعية للوالدين، وأظهرت النتائج أن فاعلية العلاج كانت متقاربة عبر هذه المتغيرات مع فروق طفيفة في التأثير، ومن أبرز محددات الدراسة صغر حجم العينة، وعدم وجود متابعة طويلة الأمد، والاعتماد على مقاييس ذاتية، ما قد يؤثر على قابلية تعميم النتائج. وتؤكد هذه الدراسة على إمكانية استخدام تقنية EMDR كخيار علاجي فاعل وغير دوائي لعلاج القلق لدى المراهقين في البيئة المدرسية، وتوصي الدراسة بإجراء أبحاث مستقبلية لقياس الآثار طويلة الأمد لهذه التقنية على عينات أكبر وأكثر تنوعًا، مع دراسة متغيرات نفسية وبيئية إضافية.

الكلمات المفتاحية: إزالة التحسس وإعادة المعالجة بحركات العين (EMDR)، اضطراب القلق المعمم، طلبة المرحلة الثانوية، المنهج التجريبي، الصحة النفسية لدى المراهقين، التدخل العلاجي، GAD-7، العلاج النفسي، العلاج المدرسي.