**The Critical Review of Social Sciences Studies**

**Online ISSN:** 3006-7170
**Print ISSN:** 3006-7162
Volume 4, Number 1, 2026, Pages 2013 – 2030
**Journal Home Page**
**https://thecrsss.com/index.php/Journal/about**

# Surah Ar-Rahman Recitation and Affective-Cognitive Outcomes in Young Adults, An Experimental Study of Anxiety, Mood, and Selective Memory Consolidation

**Areesha Nadeem[1], Ather Mujitaba[2], Suleman Ahmad[3] & Ayla Ihsan[4]**

[1]*Department of Humanities and Social Science, GIFT University, Gujranwala, Punjab, Pakistan,*
*Email: 201520147@gift.edu.pk*
[2]*Lecturer, Department of Humanities and Social Science, GIFT University, Gujranwala, Punjab, Pakistan,*
*Email: ather.mujitaba@gift.edu.pk*
[3]*Department of Humanities and Social Science, GIFT University, Gujranwala, Punjab, Pakistan,*
*Email: Sulemanahmad.0148@gmail.com*
[4]*Department of Humanities and Social Science, GIFT University, Gujranwala, Punjab, Pakistan,*
*Email: 211520095@gift.edu.pk*

**ARTICLE INFO**

***Article History:***

| | | |
|---|---|---|
| *Received:* | *January* | *08, 2026* |
| *Revised:* | *February* | *06, 2026* |
| *Accepted:* | *February* | *20, 2026* |
| *Available Online:* | *March* | *02, 2026* |

***Keywords:***

*Surah Ar-Rahman, state-trait anxiety, mood, memory consolidation*

***Corresponding Author:***
*Areesha Nadeem*
***Email:***
*201520147@gift.edu.pk*

OPEN ACCESS

## ABSTRACT

*The study explores the impact of Surah Ar- Rahman on state-trait anxiety, mood, and memory consolidation among moderate religious young adults in comparison to the Jummah Sermon. Employing a pretest-posttest true experimental design, fifty university students (ages 18-25) were randomly assigned to Surah Ar-Rehman and Jummah Sermon groups. The participants underwent pre-testing utilizing the State-Trait Anxiety Inventory (STAI) and the Positive and Negative Affect Schedule (PANAS), followed by immediate recall tasks. Subsequently, they listened to either Surah Ar-Rahman or a Jummah Sermon for ten minutes, leading into a post-testing session that incorporated delayed recall, STAI, and PANAS. The findings showed that within group state-trait anxiety reduced significantly in both groups after the listening session, but no difference was found between groups in state-trait anxiety. Both groups displayed mood improvements; however, in Surah Ar- Rahman group, negative mood reduced significantly. Moreover, Surah Ar-Rahman group had no significant change in overall recall, but showed higher positive word recall, lower threatening word recall, and no change in neutral word recall, whereas the Jummah Sermon group exhibited reduced overall recall and positive word recall with no significant change in threatening or neutral words recall. Between-group findings revealed no baseline differences, but at post-test the Surah Rahman group demonstrated improvement in overall and positive recall, with no difference in threatening or neutral word recall. The results imply that Surah Ar-Rahman affects state-trait anxiety, mood and memory consolidation in moderately religious young adults positively.*

## Introduction

Young adulthood can be defined as a stage in life that comprises individuals ranging from 18 to 25 years old. At this stage in life, individuals go through various transitions in life, including higher education, career development, and meaningful relationships (Arnett, 2000). This stage in life is very important as it offers individuals independence and freedom to explore and discover themselves as well as set long-term goals (Arnett, 2000). In Pakistan, two-thirds of its population comprises individuals below the age of 30 years. At this stage in life, young people form the largest youth population in the country's history (Ahmad, 2018). At this stage in life, individuals can be expected to take risks as they explore different facets of their lives, including spirituality and religion (Arnett, 2000). In young Muslims in Pakistan, religion plays a very important role in defining their identities as they are influenced by religious activities such as reciting the Quran. At this stage in life, individuals can be expected to have a very positive impact on personal development as well as mental health as they recite religious materials (Khadijeh Moulaei et al., 2023).

Previous research has indicated that religious activities, such as Quran listening and reciting, especially Surah Ar-Rahman, can help in reducing anxiety, improving moods, and improving cognitive abilities (Hussain, 2021; Saleem & Saleem, 2021), especially working memory in n-back experimental task (Mujitaba et al., 2024; Mujitaba et al., 2025). Investigating the impact of reciting the Quran, especially Surah Ar-Rahman, on mental health and coping styles can give deeper insights into the role of religion as a tool for self-development (Rafique et al., 2017). Therefore, this study aims to investigate the impact of reciting Surah Ar-Rahman on anxiety, moods, and working memory in young adults, which can add to the literature on the role of spirituality in mental and cognitive development.

Surah Ar-Rahman, the 55th chapter of the Quran, is famous worldwide for its rhythmic beauty and spiritual content. It has 78 verses. The Surah was revealed before the migration of Prophet Muhammad from Makkah to Medina (Rafique et al., 2017). The recitation of Surah Ar-Rahman by Qari Abdul Basit showed its potential benefits for reducing anxiety and improving moods (Al-Galal & Fakhri Taha Alshaikhli, 2017). The recitation of Surah Ar-Rahman by Qari Abdul Basit is very popular worldwide for its melodious tones and correct recitation of the Quran with correct Tajweed (Mohannad Eid AbuRuz et al., 2023). His ability to modulate the tone of his voice, maintain rhythm, and emphasize words like "keywords" has been found to have a calming effect, which can reduce stress and enhance emotional well-being (Al-Galal & Fakhri Taha Alshaikhli, 2017; Khadijeh Moulaei et al., 2023). This has led to many scholars focusing on his recitative style in research aimed at investigating the therapeutic effects of reciting the Quran, as it has always been proven to be more effective in inducing relaxation and calmness (Khadijeh Moulaei et al., 2023; Mohannad Eid AbuRuz et al., 2023). Surah Ar-Rahman has been proven to induce relief from psychological distress, especially anxiety, which is described as feelings of tension, nervousness, and worrying (Alnajashi et al., 2025).

Anxiety, which is associated with increased heart rate and worrying, can be reduced with treatments such as reciting Surah Ar-Rahman, which has been shown to decrease both physiological and psychological measures of anxiety (Alnajashi et al., 2025). Anxiety, particularly when increased, can impair cognitive processes as it can generate intrusive thoughts and maladaptive coping mechanisms (Derakshan et al., 2009). Different studies have proven that the recitation of Surah Ar-Rahman can alleviate anxiety levels, especially in pregnant women (Irmawati et al., 2020), and can have similar effects as soothing music in reducing heart rates, respiration rates, and anxiety levels (Alnajashi et al., 2025). By calming the body and mind, Surah

Ar-Rahman can induce emotional stability, promoting positive emotions and reducing negative emotions (Fredrickson & Levenson, 1998).

Moods, as we know them, can be described as states of mind that last for a long time. Moods can be either very intense or very weak. If a person is in a "good place" in their emotional state of mind, they can be in a better position to perform complex mental tasks. That is exactly where the rhythmic recitation of the Quran comes in. Its ability to lead the mind to a state of complete relaxation has already been documented (Abdullah & Omar, 2011). For example, in a study conducted on Muslim women with depression, it was observed that the sound as well as the profound meaning of Surah Ar-Rahman directly impacted the brain activity to reduce the level of symptoms (Rafique et al., 2017). As Hanafi et al. (2024) have noted, listeners can display obvious signs of being more at ease during the recitation of the Quran. However, this is not just superficial but, in fact, improves the working memory while calming turbulent moods (Hussain, 2021). To put it briefly, the calming of anxiety, which leads to negative emotions, means the mind is no longer "hijacked" into these feelings (Lupien et al., 2009; Fredrickson & Levenson, 1998; Rolls, 1992). This new-found stability in emotion is the catalyst for improving cognitive functions. When anxiety is reduced, so is cortisol, which protects the hippocampus and allows the brain to solidify memories in an efficient way (Lupien et al., 2009).

In this study, the mainly focus was on episodic memory, the ability to consciously remember personally experience events from one's past (Tulving, 2002), and on consolidation, the study focused on immediate and delated recall (with interval of more than 10 minutes). Episodic memory not only includes recall of past events, but also recall of words (verbal recall) that were previously exposed to individual (Morrison et al., 2018). As the formation of episodic memory a type of long-term memory, is closely relate to memory consolidation, because newly encoded verbal experiences must be stabilized over time to become durable and retrievable episodic memories (Squire et al., 2015). Memory consolidation is the process by which memories in short-term memory, which are otherwise temporary, are stored in long-term memory in a permanent form, a concept first described by Müller and Pilzecker (1900). Memory consolidation has been found to take place in different stages, such as initial consolidation, which happens in a matter of minutes or hours, sleep-dependent consolidation, which happens after the first night post-learning, and long-term systems consolidation, which can take days or weeks (Dudai, 2012). Memory consolidation has also been found to be selective, such that the brain consolidates memories that are emotionally significant in preference to those that are not (McGaugh, 2004).

According to the Multiple Storage Model, the process of memory begins with sensory memory, followed by short-term memory, and then long-term memory with the aid of rehearsal. Anxiety and mood states have been found to impact memory by regulating major neurotransmitters such as serotonin and dopamine (Bairy & Kumar, 2019). Reciting the Quran and the surah, especially Surah Ar-Rahman, has been found to improve memory consolidation due to the repetitive and rhythmic nature of the recitation, which improves neuroplasticity and cognitive abilities (ul-Ain Irfan et al., 2019; Kannan et al., 2022). It has been found that memorizing the Quran improves the calming effect on both anxiety and mood states, which improves cognitive abilities by freeing the brain from the usual processes of regulating these states (Sirin et al., 2021). The recitation of Surah Ar-Rahman activates brain areas linked with emotional stability, cognitive processes, and memory, leading to improved performance in memory and emotional states by reducing anxiety and improving mood states (FAISAL, 2025; Nur Riviati & Indra, 2024). Recitation of Surah Ar-Rahman reduces anxiety levels and improves working memory. Consequently, Surah Ar-Rahman can be used as a potential tool for memory consolidation (ul-Ain Irfan et al., 2019; Kannan et al., 2022). Further research is required to examine whether recitation of the Quran improves memory

consolidation in general or improves emotionally relevant information (Fredrickson & Levenson, 1998; McGaugh, 2015).

The Multiple Storage Model of Memory, as discussed by Atkinson and Shiffrin (1968), states that information is stored in sensory memory and then transferred to short-term and long-term memory after rehearsal. Along with this model of memory, Fredrickson and Levenson's Broaden and Build Theory of 1998 states that positive emotions broaden cognitive resources and improve performance in terms of memory by building better regulation of emotions and reducing anxiety levels. Previous studies have shown that Quranic recitation affects anxiety levels and mood states individually; however, there is still a significant gap in understanding the relationship between anxiety levels, mood states, and memory consolidation directly. The role of the reciter of the Quran, such as Qari Abdul Basit, and the contribution of the reciter towards the level of anxiety and mood states individually and the role of the reciter towards memory consolidation have not been explored adequately. The cultural role of Pakistani Muslim youth is also not explored adequately in this context of research and is therefore needed to be explored in this study. The spiritual significance of Surah Ar-Rahman has been well recognized, and there is a plethora of research evidence available on its potential effects on psychological states like anxiety, depression, and various medical diseases. Yet, state-trait anxiety, mood states, and memory with Surah Ar-Rahman have received little research attention. The present research aims to explore the effects of listening to Surah Ar-Rahman on psychological states like state-trait anxiety, mood states, and memory in moderately religious young adults. Moderately religious young adults have been selected for this research to avoid the ceiling effects that highly religious individuals exhibit towards religious materials. At the same time, non-religious individuals would not show interest in religious materials. The research provides valuable insights for the broader audience in the context of the Eastern population. The hypotheses to be tested in this study are as follows:

1. Surah Ar-Rahman would result in reduced state-trait anxiety compared to the Jummah sermon, using the State-Trait Anxiety Inventory (STAI).
2. Surah Ar-Rahman would result in reduced negative affect and increased positive affect compared to the Jummah sermon.
3. The Surah Ar-Rahman recitation group will show greater improvement in memory recall than the Jummah sermon group.
4. Surah Ar-Rahman would result in increased recall of positive words compared to the Jummah sermon.

By filling these knowledge gaps, researchers would have a better understanding of the intricate relationship between Surah Ar-Rahman, state-trait anxiety, negative and positive affect, and memory. This study could also help researchers know more about the role of religious activities, such as reading religious texts, in our memory and our mental status, such as anxiety and mood.

## Methods

### Study Design and Approval of Study

The study utilized pretest-posttest true experimental design. The ethic review board and institutional approvals of data collection were obtained before beginning the experiment by a private university in Gujranwala, Pakistan.

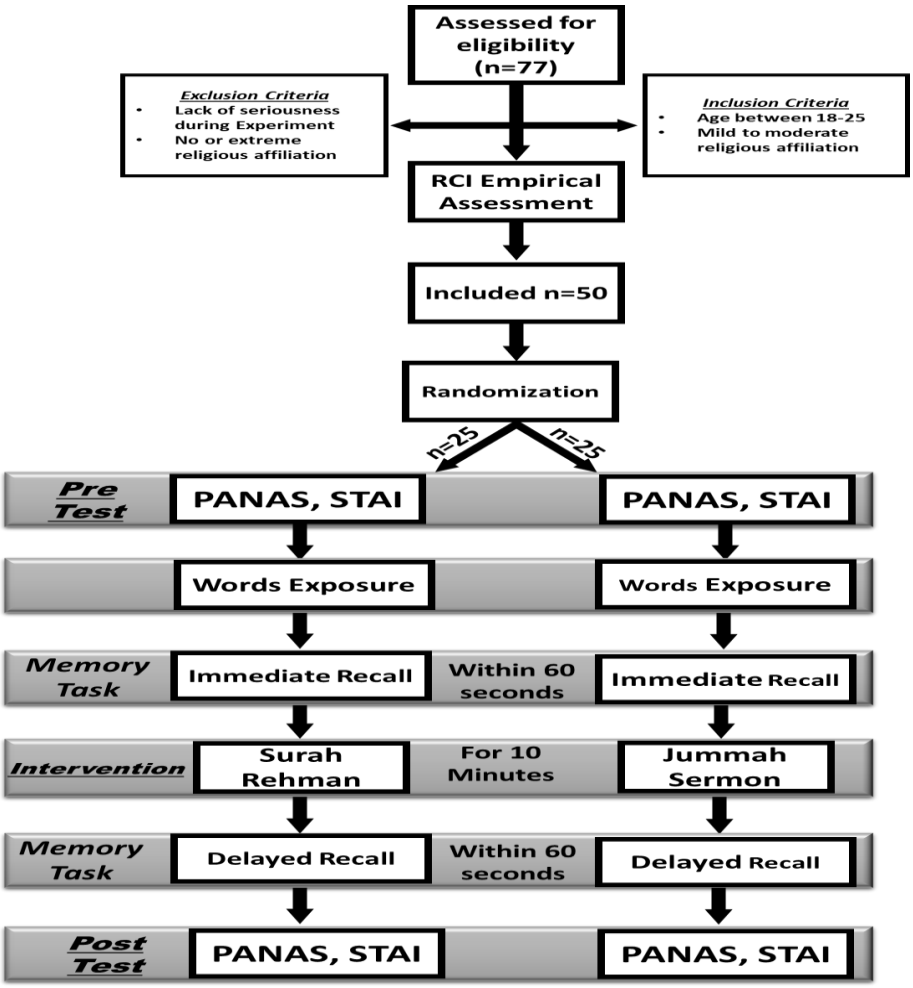
### Participants

A priori power analysis using G*Power 3.1(Faul et al., 2009) indicated that 21–26 participants per group were needed to detect a large effect size ($d = 0.80$) with 80% power at $\alpha = .05$. Participants ($N = 50$; ages 18–25) were purposively sampled and screened using the Religious Commitment

Inventory (RCI-10; Worthington et al., 2003), with only those scoring in the mild to moderate religiosity range included (see Figure 1). Individuals with high religious commitment (e.g., hafiz-e-Quran, daily reciters) were excluded to avoid ceiling effects, while those with low religious affiliation were excluded to reduce floor effects and disengagement with spiritual stimuli (Hill & Pargament, 2003; L. Fredrickson & Levenson, 1998). Moderately religious individuals were ideal for observing acute psychological responses to spiritually salient but non-routine auditory input (Koenig et al., 2012; Arnett, 2000). Participants were randomly assigned via the fishbowl method to either the Surah Ar-Rahman or Jummah Sermon group (n = 25 each) to reduce selection bias.

Each participant was given information sheets that needed to be filled in regarding the purpose of the study, the risk involved, and the methods of data collection, and seeking consent from the participants. The confidentiality and anonymity of the participants were ensured as the information was kept confidential and only accessible to the researcher. The participants' queries and concerns were addressed on time. However, a single-masked condition was maintained, as participants were not informed that the study specifically aimed to investigate the effects of Surah Ar-Rahman on their emotions and memory. Instead, they were told that the research was focused on evaluating the effects of Qur'anic recitation in general in order to prevent them from predicting or becoming aware of the study's main outcomes.

**Figure 1: Flow Chart of Sample Selection, Random Allocation, and Experiment Design Used in the Study**




Note: This Figure illustrates the sequence of events from eligibility assessment, inclusion criteria, randomization, pre-assessment, listening to Surah Ar-Rahman or Jummah Sermon, and post-

intervention assessment phases of the study. The process includes pre-testing (STAI, PANAS), word exposure (60-90 seconds), immediate recall, intervention (Surah Ar-Rahman or Jummah Sermon for 10 minutes), delayed recall, and post-testing (STAI, PANAS).

**Measures**

***Religious Commitment Inventory-10 (RCI-10):*** The RCI-10, which assesses the degree to which an individual adheres to their religious practices, values, and beliefs and incorporates them into daily life, was used to evaluate whether participants met the inclusionary criteria. RCI items are scored on a 5-point Likert scale, with 1 (Not at all true of me) to 5 (Totally true of me). Higher scores indicate a stronger affiliation with religion. An RCI-10 score of 38 or higher was categorized as an individual as highly religious (Worthington, 1988). Cronbach's alpha for the RCI-10 ranges from 0.92 to 0.98 across different religious groups.

***Short-Version of State-Trait Anxiety Inventory***. A 10-item brief version of the S-STAI (STAI-10; Zsido et al., 2020) was used to assess anxiety levels on a 4-point Likert scale (1 = "not at all," 4 = "very much so"). It includes five items for state anxiety (STAIS-5; Cronbach's alpha = 0.92) and 5 for trait anxiety (STAIT-5; Cronbach's alpha = 0.85). STAI-10 scores range from 10 to 40, with higher scores corresponding to increased anxiety.

***Positive and Negative Affect Schedule (PANAS).*** A 20-item self-report measure, the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), was used to assess distinct dimensions of Positive Affect (PA) and Negative Affect, rated on a 5-point Likert scale (ranging from "very slightly or not at all" to "extremely"). PA consists of 10 items and is linked to pleasurable interactions with the environment, while NA is associated with a range of negative sensations like wrath, guilt, or anxiety. The PANAS has demonstrated strong internal consistency, with Cronbach's alpha coefficients ranging from 0.86 to 0.90 for PA and 0.84 to 0.87 for NA, indicating excellent reliability.

***Memory Task***. The memory task involved the random presentation of 30 words, 10 positives, 10 threatening, and 10 neutral, taken from Mujitaba et al. (2025), in the Arial font (size 40) at the the center of the standard-size computer screen using OpenSesame, as shown in Figure 1 in the supplements. The task began with a fixation cross (0.5 s), followed by a word displayed for 2.5 seconds, in accordance with guidelines by Sternberg (1966) and Baddeley (1992) for optimal encoding and short-term memory. Memory recall was first conducted immediately after exposure to the word list and within 60 seconds. At the same time, they exhibit delayed recall after listening to audio recitations for 10 minutes.

## Data analysis

All statistical analyses were conducted using IBM SPSS Statistics version 26—preliminary data screening involved checks for missing values, outliers, and adherence to the necessary statistical assumptions. Normality was evaluated using the Shapiro–Wilk test. Additionally, boxplots were scrutinized to identify potential univariate outliers, with no significant violations observed. To evaluate the within-group effects of each intervention, paired-sample t-tests were performed separately for the Surah Ar-Rahman and Jummah sermon groups on pre-test and post-test scores of the State-Trait Anxiety Inventory (STAI) and the Positive and Negative Affect Schedule (PANAS). Between-group comparisons of change scores were analyzed using independent-sample t-tests to determine the differential effects of the interventions.

For cognitive outcomes, independent-sample t-tests were used to compare post-intervention recall performance across three-word categories: positive, threatening, and neutral. All tests were two-tailed, with statistical significance set at an alpha level of .05. Effect sizes were calculated using

Cohen's d, categorized as small (0.20), medium (0.50), or large (0.80) according to Cohen's (1988) conventional thresholds. Furthermore, observed power values for all significant effects were reported to enhance the robustness of the inferences. Descriptive statistics, including means, standard deviations, and 95% confidence intervals, were provided to facilitate interpretation and to ensure reproducibility.

**Procedure**

Institutional Review Board and Ethical Review Committee approval was granted at the first stage of this research planning. This ensured that all participants provided written informed consent for the intervention-based study in accordance with American Psychological Association standards (APA). The experiment began with a pre-assessment using state-trait anxiety and PANAS, followed by exposure to a set of 30 words (10 Positive, 10 Threatening, and 10 Neutral) displayed in random order (to enhance the internal validity) during the experiment. Post-test exposure, an immediate recall memory task was conducted for 60 seconds, marking all recalled words (Including correct and incorrect ones). Participants in both groups were instructed that they would be exposed to Quranic recitation without being informed that one group would hear Surah Ar-Rahman and the other the Jummah sermon. Following the immediate recall, participants in the Surah Ar-Rahman group listened to a melodious recitation of Surah Ar-Rahman(verses 1-36) by Qari Abdul Basit with tajweed (Surah Ar Rahman Link) for 10 minutes as a conditioned stimulus, while the Jummah Sermon group listened to a Jummah sermon (Jummah Sermon Link) in Arabic for 10 minutes. We chose this audio because the Jummah sermon is not entirely based on the Qur'anic text; moreover, the selected recitation style was comparatively similar to that of Qari Abdul Basit (Mohannad Eid AbuRuz et al., 2023).

Post-testing the listening task, participants recalled the words again within 60 seconds. Finally, the post-intervention testing was conducted using the STAI and PANAS. The collected data were entered into an SPSS data file, which was then reviewed for initial screening, including checks for missing values, outlier detection, normality assessment, and reliability analysis.

## Results

**Hypothesis 1:** The recitation of Surah Ar-Rahman will significantly reduce state-trait anxiety, improve mood, and enhance memory recall of positive words compared to the Jummah sermon.

**Table 1:** ***Paired Sample t-test for Pre and Post State-Trait Anxiety Scores in Surah Ar-Rahman and Jummah Sermon Groups***

| | **Pre-test** | | **Post-test** | | | | ***95% CI*** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***df*** | ***LL*** | ***UL*** | ***p*** | ***Cohen's d*** |
| Surah Ar-Rahman (n=25) | | | | | | | | | | |
| S-STAI | 21.32 | 5.87 | 15.92 | 4.66 | 8.46 | 24 | 4.08 | 6.72 | .001 | 1.69 |
| STAIS-5 | 10.28 | 3.02 | 7.04 | 1.98 | 7.35 | 24 | 2.33 | 4.15 | .001 | 1.47 |
| STAIT-5 | 11.04 | 3.60 | 8.88 | 3.07 | 5.59 | 24 | 1.36 | 2.96 | .001 | 1.11 |
| Jummah Sermon (n=25) | | | | | | | | | | |
| S-STAI | 20.88 | 5.84 | 14.72 | 4.97 | 8.78 | 24 | 4.71 | 7.61 | .001 | 1.75 |
| STAIS-5 | 9.84 | 2.88 | 6.80 | 2.34 | 7.64 | 24 | 2.22 | 3.86 | .001 | 1.52 |
| STAIT-5 | 11.04 | 3.98 | 7.92 | 3.14 | 6.90 | 24 | 2.19 | 4.05 | .001 | 1.38 |

*Note.* S-STAI= Short Version of State-Trait Anxiety Inventory, STAIS-5 = state anxiety, STAIT-5= trait anxiety

As shown in Table 1, paired-samples t tests were conducted to evaluate pre- to post-intervention changes in anxiety outcomes within each group, and the 95% confidence intervals (CIs) indicate the range of the mean reduction scores (pre-test minus post-test). In the Surah Ar-Rahman group (n = 25), total Short Version of State-Trait Anxiety Inventory (S-STAI) scores decreased from M = 21.32, SD = 5.87 to M = 15.92, SD = 4.66, t(24) = 8.46, p < .001, 95% CI [4.08, 6.72], d = 1.69. State anxiety (STAIS-5) also decreased from M = 10.28, SD = 3.02 to M = 7.04, SD = 1.98, t(24) = 7.35, p < .001, 95% CI [2.33, 4.15], d = 1.47. Trait anxiety (STAIT-5) decreased from M = 11.04, SD = 3.60 to M = 8.88, SD = 3.07, t(24) = 5.59, p < .001, 95% CI [1.36, 2.96], d = 1.11.

A similar pattern was observed in the Jummah Sermon group (n = 25). Total S-STAI scores declined from M = 20.88, SD = 5.84 to M = 14.72, SD = 4.97, t(24) = 8.78, p < .001, 95% CI [4.71, 7.61], d = 1.75. State anxiety (STAIS-5) decreased from M = 9.84, SD = 2.88 to M = 6.80, SD = 2.34, t(24) = 7.64, p < .001, 95% CI [2.22, 3.86], d = 1.53. Trait anxiety (STAIT-5) decreased from M = 11.04, SD = 3.98 to M = 7.92, SD = 3.14, t(24) = 6.90, p < .001, 95% CI [2.19, 4.05], d = 1.38. Overall, both groups showed statistically significant and large within-group reductions across total anxiety, state anxiety, and trait anxiety, and all confidence intervals excluded zero, indicating reliable pre- to post-intervention improvement.

To compare differences in pre-test and post-test intervention assessment state-trait anxiety scores between groups, an independent sample t-test was conducted.

**Table 2:** ***Independent Sample t-test for Pre and Post-S-STAI in Surah Ar-Rahman and Jummah Sermon Groups***

| | **Surah Ar-Rahman (n=25)** | | **Jummah Sermon (n=25)** | | | | ***95% CI*** | | |
|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***p*** | ***LL*** | ***UL*** | ***Cohen's d*** |
| | | | | Pre-test | | | | | |
| S-STAI | 21.32 | 5.87 | 20.88 | 5.84 | .26 | .79 | -2.89 | 3.77 | .08 |
| STAIS-5 | 10.28 | 3.02 | 9.84 | 2.88 | .52 | .60 | -1.23 | 2.11 | .15 |
| STAIT-5 | 11.04 | 3.60 | 11.04 | 3.98 | .00 | 1.00 | -2.15 | 2.15 | .00 |
| | | | | Post-test | | | | | |
| S-STAI | 15.92 | 4.66 | 14.72 | 4.97 | .88 | .38 | -1.54 | 3.94 | .25 |
| STAIS-5 | 7.04 | 1.98 | 6.80 | 2.34 | .39 | .69 | -.99 | 1.47 | .11 |
| STAIT-5 | 8.88 | 3.07 | 7.92 | 3.14 | 1.09 | .28 | -.80 | 2.72 | .31 |

*Note.* S-STAI = Short Version of State-Trait Anxiety Inventory, STAIS-5= State anxiety, STAIT-5= Trait anxiety

The between-group comparisons showed that the two conditions were statistically comparable at both assessment points (see Table 2). At pre-test, there was no significant difference between the Surah Ar-Rahman and Jummah Sermon groups on overall state-trait anxiety (S-STAI), t(48) = .26, p = .79, 95% confidence interval (CI) [-2.89, 3.77], d = .08, on state anxiety (STAIS-5), t(48) = .52, p = .60, 95% CI [-1.23, 2.11], d = .15, or on trait anxiety (STAIT-5), t(48) = .00, p = 1.00, 95% CI [-2.15, 2.15], d = .00. These baseline findings support initial equivalence between groups.

At post-test, the same pattern remained (see Table 2). Group differences were not significant for total S-STAI, t(48) = .88, p = .38, 95% CI [-1.54, 3.94], d = .25, state anxiety, t(48) = .39, p = .69, 95% CI [-.99, 1.47], d = .11, or trait anxiety, t(48) = 1.09, p = .28, 95% CI [-.80, 2.72], d = .31. Taken together with Table 1, the results indicate that both interventions were associated with substantial within-group improvement over time, while neither intervention demonstrated statistical superiority over the other at pre-test or post-test.

The results suggested a noticeable reduction in state-trait anxiety (S-STAI) for both the pre-and post-intervention periods, as indicated by the within-group (paired sample t-test) comparison in the experimental (Surah Ar-Rahman) and control groups (Jummah sermon). In contrast, no statistically significant difference was observed in state-trait anxiety between the pre and post-intervention states for the between-group comparison (independent sample t-test).

**Hypothesis 2:** Surah Ar-Rahman will improve mood by significantly decreasing negative affect (NA), as measured by the PANAS, compared to the Jummah sermon.

Following confirmation of the data's suitability, a paired-sample t-test was conducted to examine changes in Positive Affect (PA) and Negative Affect (NA) scores from pre-testing to post-testing in both the intervention and control groups.

**Table 3:** ***Paired Sample t-test for Pre and Post PANAS Measures in Surah Ar-Rahman and Jummah Sermon Groups***

| | ***Pre-test*** | | ***Post-test*** | | | | ***CI 95%*** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***T*** | ***df*** | ***LL*** | ***UL*** | ***p*** | ***Cohen's d*** |
| Surah Ar-Rahman (n=25) | | | | | | | | | | |
| PA | 28.36 | 6.45 | 30.56 | 6.97 | -3.46 | 24 | -3.51 | -0.84 | .002 | -.69 |
| NA | 23.48 | 6.91 | 17.40 | 6.05 | 16.26 | 24 | 5.31 | 6.85 | .001 | 3.25 |
| Jummah Sermon (n=25) | | | | | | | | | | |
| PA | 31.64 | 7.37 | 33.60 | 7.85 | -2.39 | 24 | -3.65 | -0.27 | .02 | -.48 |
| NA | 24.96 | 6.68 | 21.56 | 6.57 | 6.50 | 24 | 2.32 | 4.48 | .001 | 1.30 |

*Note.* PA= positive affect, NA= negative affect, r = correlation

As shown in Table 3, paired-samples t tests were conducted to examine pre- to post-test changes in positive and negative affect within each intervention group. In the Surah Ar-Rahman group, positive affect increased from pre-test (M = 28.36, SD = 6.45) to post-test (M = 30.56, SD = 6.97), t(24) = -3.46, p = .002, 95% CI [-3.51, -0.89], d = -.69. Negative affect decreased from pre-test (M = 23.48, SD = 6.91) to post-test (M = 17.40, SD = 6.05), t(24) = 16.26, p < .001, 95% CI [5.31, 6.85], d = 3.25. In the Jummah Sermon group, positive affect increased from pre-test (M = 31.64, SD = 7.37) to post-test (M = 33.60, SD = 7.85), t(24) = -2.39, p = .025, 95% CI [-3.65, -0.27], d = -.48. Negative affect decreased from pre-test (M = 24.96, SD = 6.68) to post-test (M = 21.56, SD = 6.57), t(24) = 6.50, p < .001, 95% CI [2.32, 4.48], d = 1.30. Overall, both auditory interventions were associated with improved affective outcomes, reflected by significant increases in positive affect and significant decreases in negative affect from pre-test to post-test.

An independent sample t-test was used to examine whether there was a difference in pre- and post-intervention scores of the PANAS between the groups.

Independent-samples t tests were conducted to compare the Surah Ar-Rahman group and the Jummah Sermon group on positive affect (PA) and negative affect (NA) at pre-test and post-test (see Table 4). At pre-test, the groups did not differ significantly on PA, with the Surah Ar-Rahman group (M = 28.36, SD = 6.45) scoring lower than the Jummah Sermon group (M = 31.64, SD = 7.37), t(48) = -1.67, p = .100, 95% confidence interval (CI) [-7.22, 0.66], d = -.47. The groups also did not differ significantly on NA at pre-test, with means of M = 23.48 (SD = 6.91) and M = 24.96 (SD = 6.68), respectively, t(48) = -0.77, p = .440, 95% CI [-5.34, 2.38], d = -.21.

**Table 4:** ***Independent Sample t-test for Pre and Post PANAS in Surah Ar-Rahman and Jummah Sermon Groups***

| | Surah Ar-Rahman (n=25) | | Jummah Sermon (n=25) | | | | 95% CI | | |
|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***p*** | ***LL*** | ***UL*** | ***Cohen's d*** |
| | | | | Pre-test | | | | | |
| PA | 28.36 | 6.45 | 31.64 | 7.37 | -1.67 | .10 | -7.22 | .66 | -.47 |
| NA | 23.48 | 6.91 | 24.96 | 6.68 | -.77 | .44 | -5.34 | 2.38 | -.21 |
| | | | | Post-test | | | | | |
| PA | 30.56 | 6.97 | 33.60 | 7.85 | -1.44 | .15 | -7.26 | 1.18 | -.40 |
| NA | 17.40 | 6.05 | 21.56 | 6.57 | -2.32 | .02 | -7.75 | -.56 | -.65 |

*Note.* PA= positive affect, NA= negative affect

At post-test, the between-group difference in PA remained non-significant, with the Surah Ar-Rahman group (M = 30.56, SD = 6.97) and the Jummah Sermon group (M = 33.60, SD = 7.85), t(48) = -1.44, p = .150, 95% CI [-7.26, 1.18], d = -.40. In contrast, NA differed significantly at post-test, with lower NA in the Surah Ar-Rahman group (M = 17.40, SD = 6.05) than in the Jummah Sermon group (M = 21.56, SD = 6.57), t(48) = -2.32, p = .020, 95% CI [-7.75, -0.56], d = -.65. Overall, the findings indicate baseline comparability across groups and suggest that, by post-test, the Surah Ar-Rahman condition was associated with a greater reduction in negative affect, whereas between-group differences in positive affect were not statistically significant.

**Hypothesis 3:** Surah Ar-Rahman will enhance memory performance, particularly the recall of positive words, compared to the Jummah sermon.

A paired Sample t-test for Positive, Threatening, and Neutral Words Recall in Experimental and Control Groups was conducted to analyze the difference between pre- and post-intervention scores.

**Table 5:** ***Paired Sample t-test for Pre and Post Positive, Threatening, and Neutral word recall in Surah Ar-Rahman and Jummah Sermon Groups***

| | *Pre-test* | | *Post-test* | | | | | *95% CI* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***df*** | ***p*** | ***LL*** | ***UL*** | ***Cohen's d*** |
| | | | | | Surah Ar-Rahman (n=25) | | | | | |
| Recall | 9.08 | 2.01 | 9.28 | 1.90 | -.69 | 24 | .49 | -0.80 | 0.40 | -.13 |
| Pos. | 3.36 | 1.38 | 4.76 | 1.36 | -14.00 | 24 | .001 | -1.61 | -1.19 | -2.80 |
| Thr. | 3.20 | 1.00 | 2.32 | .90 | 6.06 | 24 | .001 | 0.58 | 1.18 | 1.21 |
| Neu. | 2.52 | 1.32 | 2.20 | 1.19 | 1.49 | 24 | .14 | -0.12 | 0.76 | .29 |
| | | | | | Jummah Sermon (n=25) | | | | | |
| Recall | 9.00 | 2.17 | 7.84 | 2.03 | 3.31 | 24 | .003 | 0.44 | 1.88 | .66 |
| Pos. | 3.28 | 1.33 | 2.84 | 1.06 | 2.19 | 24 | .03 | 0.03 | 0.85 | .43 |
| Thr. | 3.12 | 1.13 | 2.64 | 1.11 | 1.72 | 24 | .09 | -0.10 | 1.06 | .34 |
| Neu. | 2.60 | 1.19 | 2.36 | 1.41 | 1.10 | 24 | .28 | -0.21 | 0.69 | .22 |

*Note.* Pos. = Positive words, Thr. = Threatening words, Neu. = Neutral words

As shown in Table 5, paired-samples t tests were conducted to evaluate pre- to post-intervention changes in overall recall, positive word recall, threatening word recall, and neutral word recall within each group. In the Surah Ar-Rahman group, overall recall did not change significantly from pre-test (M = 9.08, SD = 2.01) to post-test (M = 9.28, SD = 1.90), t(24) = -0.69, p = .497, 95% CI [-0.80, 0.40], d = -.14. Positive word recall increased significantly from M = 3.36 (SD = 1.38) to M

= 4.76 (SD = 1.36), t(24) = -14.00, p < .001, 95% CI [-1.61, -1.19], d = -2.80. Threatening word recall decreased significantly from M = 3.20 (SD = 1.00) to M = 2.32 (SD = 0.90), t(24) = 6.06, p < .001, 95% CI [0.58, 1.18], d = 1.21. Neutral word recall showed no significant change from M = 2.52 (SD = 1.32) to M = 2.20 (SD = 1.19), t(24) = 1.49, p = .149, 95% CI [-0.12, 0.76], d = .30. In the Jummah Sermon group, overall recall decreased significantly from M = 9.00 (SD = 2.17) to M = 7.84 (SD = 2.03), t(24) = 3.31, p = .003, 95% CI [0.44, 1.88], d = .66. Positive word recall also decreased significantly from M = 3.28 (SD = 1.33) to M = 2.84 (SD = 1.06), t(24) = 2.19, p = .038, 95% CI [0.03, 0.85], d = .44. Changes in threatening word recall, t(24) = 1.72, p = .098, 95% CI [-0.10, 1.06], d = .34, and neutral word recall, t(24) = 1.10, p = .282, 95% CI [-0.21, 0.69], d = .22, were not statistically significant. Taken together, this within-group pattern supports the hypothesis in a specific way, Surah Ar-Rahman was associated with a robust increase in positive recall and a significant reduction in threatening recall, whereas the Jummah Sermon condition showed declines in overall and positive recall. A formal test of superiority between groups should be based on the corresponding between-group analyses.

**Table 6:** ***Independent Sample t-test for Pre and Post-Recall in Surah Ar-Rahman and Jummah Sermon Groups***

| | **Surah Ar-Rahman (n=25)** | | **Jummah Sermon (n=25)** | | | | ***95% CI*** | | |
|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***p*** | ***LL*** | ***UL*** | ***Cohen's d*** |
| Pre-test | | | | | | | | | |
| Recall | 9.08 | 2.01 | 9.00 | 2.17 | .13 | .89 | -1.11 | 1. 27 | .03 |
| Pos. | 3.36 | 1.38 | 3.28 | 1.33 | .20 | .83 | -.69 | .85 | .05 |
| Thr. | 3.20 | 1.00 | 3.12 | 1.13 | .26 | .79 | -.52 | .68 | .07 |
| Neu. | 2.52 | 1.32 | 2.60 | 1.19 | -.22 | .82 | -.79 | .63 | -.06 |
| Post-test | | | | | | | | | |
| Recall | 9.28 | 1.90 | 7.84 | 2.03 | 2.58 | .01 | .31 | 2.56 | .73 |
| Pos. | 4.76 | 1.36 | 2.84 | 1.06 | 5.54 | .001 | 1.22 | 2.61 | 1.56 |
| Thr. | 2.32 | .90 | 2.64 | 1.11 | -1.11 | .26 | -.89 | .25 | -.31 |
| Neu. | 2.20 | 1.19 | 2.36 | 1.41 | -.43 | .66 | -.90 | .58 | -.12 |

*Note.* Pos. = Positive words, Thr. = Threatening words, Neu. = Neutral words

Table 6 shows that the Surah Ar-Rahman and Jummah Sermon groups were comparable at pre-test across all recall indices, total recall, t(48) = 0.13, p = .890, d = .03, 95% confidence interval (CI) [-1.11, 1.27], positive recall, t(48) = 0.20, p = .830, d = .05, 95% CI [-0.69, 0.85], threatening recall, t(48) = 0.26, p = .790, d = .07, 95% CI [-0.52, 0.68], and neutral recall, t(48) = -0.22, p = .820, d = -.06, 95% CI [-0.79, 0.63]. At post-test, the Surah Ar-Rahman group performed significantly better on total recall, t(48) = 2.58, p = .010, d = .73, 95% CI [0.31, 2.56], and positive recall, t(48) = 5.54, p < .001, d = 1.56, 95% CI [1.22, 2.61], while between-group differences were not significant for threatening recall, t(48) = -1.11, p = .260, d = -.31, 95% CI [-0.89, 0.25], or neutral recall, t(48) = -0.43, p = .660, d = -.12, 95% CI [-0.90, 0.58]. Overall, the pattern indicates baseline equivalence and a specific post-intervention advantage of Surah Ar-Rahman for overall and positive word recall.

To sum up, for the overall recall and the recall of positive, threatening, and negative words in the paired sample t-test, the experimental group (Surah Ar-Rahman) had a non-significant effect on overall recall while it significantly increased the recall of positive words and reduced the threatening words recall but has a non-significant effect on the recall of neutral words whereas, the control (Jummah Sermon) group intervention has a significant effect on overall recall and positive

words in the paired sample t-test and a non-significant effect on the recall of threatening and neutral words. The results of the independent sample (between groups) suggest that the experimental (Surah Ar-Rahman) group significantly improved overall recall and specifically enhanced the recall of positive words compared to the control (Jummah sermon) group. To investigate the effects of Surah Ar-Rahman and the Jummah sermon on recall performance of positive, threatening, and neutral words, a Repeated Measures ANOVA was conducted. The analysis compared pre- and post-intervention recall scores for both groups (Surah Ar-Rahman and Jummah Sermon). The results are presented in Table 7.

**Table 7:** ***Repeated Measures ANOVA Results for Pre and Post-Recall Scores for Positive, Threatening, and Neutral Words***

| s | Positive | | Threatening | | Neutral | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Variable** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***F*** | ***P*** | $\eta_p^2$ |
| Pre-test | | | | | | | | | |
| Surah Rahman | 3.36 | 1.38 | 3.20 | 1.00 | 2.52 | 1.33 | 3.01 | .059 | .111 |
| Jummah Sermon | 3.28 | 1.34 | 3.12 | 1.13 | 2.60 | 1.19 | 2.18 | .124 | .083 |
| Post-test | | | | | | | | | |
| Surah Rahman | 4.76 | 1.36 | 2.32 | 0.90 | 2.20 | 1.19 | 36.30 | .000 | .602 |
| Jummah Sermon | 2.84 | 1.07 | 2.64 | 1.11 | 2.36 | 1.41 | 0.97 | .386 | .039 |

Note. $\eta_p^2$= Partial Eta Squared, Known as Effect Size

With regard to the Surah Rahman group, it was found that recall scores showed improvement at post-test, $F(2, 48) = 36.30$, $p < .001$, with a large effect size, partial $\eta_p^2 = .60$, and highest recall scores for positive words, $M = 4.76$, $SD = 1.36$. Pre-test recall scores did not show significant effect, $F(2, 48) = 3.01$, $p = .059$, $\eta_p^2 = .11$. The Jummah Sermon group did not show significant differences between pre-test and post-test results (all *ps* > .05). These results indicate that recall performance improved significantly following the Surah Rahman intervention but not after the Jummah Sermon. Pairwise comparisons between groups for pre- and Post-test recall scores were also evaluated for Positive, Threatening, and Neutral words, as shown in Table 8.

**Table 8:** ***Pairwise Comparisons of Pre and Post-Recall Scores for Positive, Threatening, and Neutral Words in Surah Ar-Rahman and Jummah Sermon Groups***

| ***Group*** | ***Variable*** | ***MD*** | ***S.E.*** | ***p*** | ***95% CI*** | |
|---|---|---|---|---|---|---|
| | | | | | ***LL*** | ***UL*** |
| | Pre-test Comparisons | | | | | |
| Surah Rahman | Positive-Threatening | .16 | .35 | 1.00 | -.74 | 1.06 |
| | Positive-Neutral | .84 | .42 | .18 | -.25 | 1.93 |
| | Threatening-Neutral | .68 | .31 | .11 | -.12 | 1.48 |
| Jummah Sermon | Positive-Threatening | .16 | .34 | 1.00 | -.73 | 1.05 |
| | Positive -Neutral | .68 | .40 | .30 | -.35 | 1.71 |
| | Threatening-Neutral | .52 | .27 | .19 | -.16 | 1.20 |
| | Post-test Comparisons | | | | | |
| Surah Rahman | Positive-Threatening | 2.44* | .35 | .00 | 1.54 | 3.34 |
| | Positive -Neutral | 2.56* | .36 | .00 | 1.64 | 3.48 |
| | Threatening-Neutral | .12 | .31 | 1.00 | -.67 | .91 |
| Jummah Sermon | Positive-Threatening | .20 | .28 | 1.00 | -.51 | .91 |
| | Positive -Neutral | .48 | .39 | .70 | -.53 | 1.49 |
| | Threatening-Neutral | .28 | .36 | 1.00 | -.64 | 1.20 |

*Note.* MD= mean difference, S.E. =Standard Error

Pairwise comparisons using Bonferroni adjustment revealed no significant differences between positive, threatening, and neutral word recall at pre-test for both Surah Rahman Recall and Jummah Sermon groups (*ps* > .05). However, at post-test, the Surah Rahman group showed significantly higher recall for positive words compared to both threatening (*MD* = 2.44, *p* < .001) and neutral words (*MD* = 2.56, *p* < .001). No significant differences were found in the Jummah Sermon group at post-test (*p*> .05). These results indicate enhanced recall of positive words following the listening to Surah Rahman recitation.

## Discussion

This study investigated the impact of listening to Surah Ar-Rahman on state-trait anxiety, mood, and memory in young adults. Results demonstrated significant reductions in state-trait anxiety and mood within both experimental (Surah Ar-Rahman) and control (Jummah Sermon) groups; however, no between-group differences were observed in state-trait anxiety after listening to the recitation of Surah Ar-Rahman and Jummah Sermon. The negative mood decreased more prominently in the Surah Ar Rahman group. Nevertheless, the Surah Ar-Rahman group showed a significant memory consolidation effect in post-testing, as the Jummah Sermon group demonstrated lower memory recall compared to the Surah Ar-Rahman group. In particular, the recall of positive words improved significantly in the Surah Ar-Rahman group compared to the Jummah Sermon group. These results may be linked to the selective memory consolidation effects of Surah Ar-Rahman, as only the recall of positive words showed significant gains in post-testing.

The study revealed significant reductions in state-trait anxiety, as indicated by STAI scores, within both the Surah Ar-Rahman and Jummah sermon groups. These reductions were evident for both state and trait anxiety across the two interventions, with large effect sizes reflecting substantial decreases in anxiety levels following the interventions. These findings are consistent with previous studies that suggest that religious activities, such as reciting the Quran, are effective in reducing anxiety levels (Alnajashi et al., 2025; Irmawati et al., 2020). However, no significant differences were observed between the two groups, suggesting that both Surah Ar-Rahman and the Jummah Sermon produced comparable effects on anxiety reduction. It may have occurred because participants were not informed that they would be exposed to the Jummah Sermon. During post-experiment questioning, participants revealed that they were unable to recognize it as the Jummah Sermon and perceived it simply as a Quranic recitation. Generally, Sermons include text from Hadiths and the Quran, but in fact, not entirely text from the Quran; therefore, it is used as a control condition. Moreover, the Reciter Jummah Sermon was chosen for its similarity in style to the Surah Rahman Recitation, which was in the voice of Qari Abdul Basit. In addition to this similarity, the Jummah sermon is an important component of the Friday congregation and holds significant religious value for Muslims (Khan, 2017). More importantly, it is delivered with Tajweed (Tilawah) in a clear, paced, and rhythmic manner, which also produces calming and relaxing effects (Abdullah & Omar, 2011). These are probable reasons for observing a positive effect on participants' anxiety and mood states in the Jummah Sermon group; however, further studies may include a different control group or examine the Jummah Sermon effect specifically.

Both the Surah Ar-Rahman and the Jummah sermon interventions had a positive effect on the participants' moods, as indicated by increased positive affect (PA) and decreased negative affect (NA) scores on the Positive and Negative Affect Schedule (PANAS). It is interesting to note that the Surah Ar-Rahman intervention had a greater impact on the negative affect compared to the Jummah sermon intervention, which can be attributed to the unique positive effects of this intervention on the participants' moods. The calming rhythm and spiritual depth of Surah Ar-Rahman likely play a key role in helping young adults manage their emotions more effectively This aligns with earlier studies, which highlight how reciting the Quran can be a powerful

therapeutic tool for lowering stress and anxiety (Al-Galal & Fakhri Taha Alshaikhli, 2017; Hussain, 2021). Ultimately, these results emphasize that Surah Ar-Rahman has a unique capacity to soothe negative feelings and improve mental well-being in this age group.

Other than emotional states, this research examined the impact of Surah Ar-Rahman on memory retention, i.e., participants' retention of positive, neutral, and threatening words. Participants who were exposed to Surah Ar-Rahman showed a significant improvement in retaining positive words. On the other hand, participants who listened to a Jummah sermon experienced a decline in their memory retention scores for positive words. This may be attributed to the musical and rhythmic sound of Surah Ar-Rahman that brings a sense of calmness and serenity. This helps in clearing "mental noise" that can assist in the better processing of meaningful and positive information (ul-Ain Irfan et al., 2019; Kannan et al., 2022).

The selective enhancement of positive word recall is in line with the Broaden and Build Theory of Fredrickson and Levenson (1998). They proposed that positive emotions broaden attention and cognitive flexibility and reduce negative stimuli in attention and thought processes. Therefore, the relaxing effect of Surah Ar-Rahman helps in the selective consolidation of positive emotions in memory. These findings have important implications. They point to the cognitive-emotional potential of reciting Quranic verses and its use as a culturally sensitive tool in improving emotional and memory processes. These spiritually based interventions can be particularly useful in therapeutic and educational settings in managing anxious and stressful memory disturbances.

In contrast, there was a significant drop in memory recall performance for the Jummah sermon group, especially for positive words. This decline may be due to the less engaging and soothing nature of the Jummah sermon, which may not have had the same effect on the individual as inducing calmness of emotions as the Surah Ar-Rahman had. Cognitive resources would not have been freed from the internal states of stress and distractions without the reduction of emotional arousal and increase of positive affect. According to the cognitive load theory, states of emotional tension and/or lack of affective modulation can impair working memory capacity, resulting in poor memory for new information (Lupien et al., 2009; Derakshan et al., 2009). In addition, there is a lack of emotional resonance and saliency of the auditory input. In this case, it may fail to activate these regions of the hippocampus and prefrontal regions, leading to poor memory consolidation, especially for those with positive emotional input. Comparing these two groups of people, it can be deduced that the hypothesis stating that Surah Ar-Rahman, with its melodious and spiritually resonant recitation, improves memory performance, especially for those with positive emotional input, is correct.

This was further supported by the results obtained from the repeated measures ANOVA test, where there was a significant interaction effect found in the Surah Ar-Rahman group. This showed an improvement in the recall performance of the participants in the post-test compared to the pre-test, especially in the positive words. However, there was no significant difference found in the recall performance of the participants in the Jummah Sermon group compared to the post-test and the pre-test. There were also significant differences found in the recall performance of the Surah Ar-Rahman group, especially in the positive, threatening, and neutral words.

The findings of this study will contribute to the knowledge base regarding the link between religion, emotions, and cognitive processes. According to the Broaden and Build Theory of Fredrickson and Levenson (1998), positive emotions such as those elicited by the reading of Surah Ar-Rahman facilitate cognitive resources and memory performance.

The results of this study have supported this theory as not only did the Surah Ar-Rahman have a positive effect on the mood, but it also improved the recall of the positive words. This therefore

supports the theory that positive emotions may have a positive effect on the memory process. In addition to this, the theory of the Multiple Storage Model of memory, which was proposed by Atkinson and Shiffrin (1968), has also been supported as the rhythmic and repetitive nature of the Surah Ar-Rahman may be beneficial to the memory consolidation process for positive words.

## Limitations and Future Directions

Due to the limited sample size of the study and the reliance on self-reporting methods, there is a need to explore the use of objective biomarkers to assess anxiety levels (e.g., cortisol levels), memory (e.g., fMRI), in order to gain further insight into the relationship between Surah Ar-Rahman and spirituality. Furthermore, a longitudinal study design can be used to assess whether the benefits of Surah Ar-Rahman have long-term effects or need to be maintained. Finally, a comparison with non-religious auditory stimuli (e.g., classical music) can be made to assess the effects of spirituality.

### Declaration of Conflicting Interests

The authors declared no potential conflicts.

### Funding

This research did not receive any funding from any sector.

### Data Availability

The datasets used during this study are available from the corresponding author upon reasonable request.

## References

1. Abdullah, A. A., & Omar, Z. (2011). The Effect of Temporal EEG Signals While Listening to Quran Recitation. *International Journal on Advanced Science, Engineering and Information Technology*, *1*(4), 372. https://doi.org/10.18517/ijaseit.1.4.77
2. Ahmad, S. (2018, July 24). *Unleashing the potential of a young Pakistan*. Hdr.undp.org. https://hdr.undp.org/content/unleashing-potential-young-pakistan
3. Al-Galal, S. A., & Fakhri Taha Alshaikhli, I. (2017). Analyzing Brainwaves While Listening To Quranic Recitation Compared With Listening To Music Based on EEG Signals. *International Journal on Perceptive and Cognitive Computing*, *3*(1). https://doi.org/10.31436/ijpcc.v3i1.43
4. Alnajashi, S. A., Qasem, M. A. A. A., Al-Mishaal, K. A. A., & Aluthman, W. A. E. (2025). The Impact of Attending Qur'an Memorization Programs on Psychological Wellbeing: A Study on Adult Females. *Islamic Guidance and Counseling Journal*, *8*(2). https://doi.org/10.25217/0020258594900
5. American Psychological Association. (2022). *Anxiety*. https://www.apa.org/topics/anxiety
6. Arnett, J. J. (2000). *Emerging adulthood: A theory of development from the late teens through the twenties*. American Psychologist, 55(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469
7. Atkinson, R. C., & Shiffrin, R. M. (1968). Human Memory: a Proposed System and Its Control Processes. *Psychology of Learning and Motivation*, *2*(1), 89–195. https://doi.org/10.1016/s0079-7421(08)60422-3
8. Baddeley, A. (1992). Working memory. *Science*, 255(5044), 556–559. https://doi.org/10.1126/science.1736359

9. Bairy, L. K., & Kumar, S. (2019). Neurotransmitters and neuromodulators involved in learning and memory. *International Journal of Basic & Clinical Pharmacology*, *8*(12), 2777. https://doi.org/10.18203/2319-2003.ijbcp20195296
10. Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Science*s (2nd ed.). Routledge. https://doi.org/10.4324/9780203771587
11. Derakshan, N., Smyth, S., & Eysenck, M. W. (2009). Effects of state anxiety on performance using a task-switching paradigm: An investigation of attentional control theory. *Psychonomic Bulletin & Review*, *16*(6), 1112–1117. https://doi.org/10.3758/pbr.16.6.1112
12. Dudai, Y. (2012). The Restless Engram: Consolidations Never End. *Annual Review of Neuroscience*, *35*(1), 227–247. https://doi.org/10.1146/annurev-neuro-062111-150500
13. FAISAL, M. (2025). EFFECT OF QURANIC RECITATION ON EMOTIONAL WELL-BEING, COGNITIVE CLARITY, AND PSYCHOLOGICAL RESILIENCE. *TPM – Testing, Psychometrics, Methodology in Applied Psychology*, *32*(S9 (2025): Posted 15 December), 193–202. https://tpmap.org/submission/index.php/tpm/article/view/3159
14. Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149
15. Hanafi, M., Arif Rahmatillah, Nanang Wiyono, & Diah Kurnia Mirawati. (2024). The effect of listening to Holy Quran recitation on stress among healthy adults: a non-blinded randomized controlled trial. *Universa Medicina*, 43(1), 61–68. https://doi.org/10.18051/univmed.2024.v43.61-68
16. Hill, P. C., & Pargament, K. I. (2003). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *American Psychologist*, *58*(1), 64–74. https://doi.org/10.1037/0003-066x.58.1.64
17. Hussain, M. H. (2021). The effect of the Quran as a stimulus in enhancing working memory and mood. *International Journal of Islamic Psychology*, *4*(1), 1-11.
18. Irmawati, V., Hadju, V., Syamsuddin, S., & Arundhana, A. I. (2020). The effect of listening to the recitation of the Qur'an (Murottal Ar-Rahman surah) on the level of anxiety of pregnant women in Siti Fatimah Maternal and Child Hospital. *Enfermería Clínica*, *30*, 238–242. https://doi.org/10.1016/j.enfcli.2019.07.097
19. Kannan, M. A., Ab Aziz, N. A., Ab Rani, N. S., Abdullah, M. W., Mohd Rashid, M. H., Shab, M. S., Ismail, N. I., Ab Ghani, M. A., Reza, F., & Muzaimi, M. (2022). A review of the holy Quran listening and its neural correlation for its potential as a psycho-spiritual therapy. *Heliyon*, *8*(12), e12308. https://doi.org/10.1016/j.heliyon.2022.e12308
20. Khadijeh Moulaei, Ali Akbar Haghdoost, Kambiz Bahaadinbeigy, & Fatemeh Dinari. (2023). The effect of the holy Quran recitation and listening on anxiety, stress, and depression: A scoping review on outcomes. *PubMed*, *6*(12). https://doi.org/10.1002/hsr2.1751
21. Khan, M. A. (2017). The significance of Friday prayer (Jumu'ah) in Islam: A jurisprudential and spiritual perspective. Journal of Islamic Studies and Culture, 5(2), 10–18.
22. Koenig, H. G., King, D. E., & Carson, V. B. (2012). Handbook of Religion and Health. Oxford University Press.
23. L. Fredrickson, B., & Levenson, R. W. (1998). Positive Emotions Speed Recovery from the Cardiovascular Sequelae of Negative Emotions. *Cognition and Emotion*, *12*(2), 191–220. https://doi.org/10.1080/026999398379718
24. Lupien, S. J., McEwen, B. S., Gunnar, M. R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behavior, and cognition. Nature Reviews Neuroscience, 10(6), 434-445. https://doi.org/10.1038/nrn2639
25. McGaugh, J. L. (2004). THE AMYGDALA MODULATES THE CONSOLIDATION OF MEMORIES OF EMOTIONALLY AROUSING EXPERIENCES. *Annual Review of Neuroscience*, *27*(1), 1–28. https://doi.org/10.1146/annurev.neuro.27.070203.144157

26. McGaugh, J. L. (2015). Consolidating Memories. *Annual Review of Psychology*, 66(1), 1–24. https://doi.org/10.1146/annurev-psych-010814-014954
27. Mohannad Eid AbuRuz, Othman, E. H., Ghadeer Al-Dweik, Aaliyah Momani, & Fatma Refaat Ahmed. (2023). The Effect of Holy Quran Audio Therapy on Depression and Anxiety Among Jordanian Patients Following CABG: A Randomized Control Trial. *The Open Nursing Journal*, *17*(1). https://doi.org/10.2174/0118744346262682230921094004
28. Morrison, R. L., Pei, H., Novak, G., Kaufer, D. I., Welsh-Bohmer, K. A., Ruhmel, S., & Narayan, V. A. (2018). A computerized, self-administered test of verbal episodic memory in elderly patients with mild cognitive impairment and healthy participants: A randomized, crossover, validation study. Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring, 10, 647–656. https://doi.org/10.1016/j.dadm.2018.08.010
29. Mu¨ller GE, Pilzecker A. 1900. Experimentelle Beitra¨ge zur Lehre vom Geda¨chtnis. [Experimental contributions to the science of memory]. Z Psychol Erga¨nzungsband 1: 1–300.
30. Mujitaba, A., Majeed, H., Ashraf, A., Shamas, K., & Mehmood, S. (2025). Experimental Validation and Reliability Study of the N-Back Working Memory Task. *Qlantic Journal of Social Sciences*, *6*(1), 22–31. https://doi.org/10.55737/qjss.vi-i.25272
31. Mujitaba, A., Tahir, M., Imran, M., Saeed, S., & Afnan, F. (2024). The Cognitive Impact of Surah Ar-Rahman: An Experimental Study on the Enhancement of Working Memory. *International Journal of Politics & Social Sciences Review (IJPSSR)*, *3*(III), 360–371. https://ojs.ijpssr.org.pk/index.php/ijpssr/article/view/76
32. Mujitaba, A., Shaheen, A., Ahmad, S., Naeem, H., & Ihsan, A. (2025). Mapping Culturally Grounded English Word Affect in Pakistan: A Valence-Arousal-Dominance Lexicon. Social Sciences & Humanity Research Review, 2(4), 1724-1736.
33. Nur Riviati, & Indra, B. (2024). Reading Holy Quran Associated With Better Cognitive Function in Older Adults: A Systematic Review. *Gerontology & Geriatric Medicine*, *10*. https://doi.org/10.1177/23337214241239219
34. Rafique, R., Anjum, A., & Raheem, S. S. (2017). Efficacy of Surah Al-Rehman in Managing Depression in Muslim Women. *Journal of Religion and Health*, *58*(2), 516–526. https://doi.org/10.1007/s10943-017-0492-z
35. Rolls, E. T. (1992). Neurophysiological mechanisms underlying face processing within and beyond the temporal cortical visual areas. Philosophical Transactions of the Royal Society of London. Series B: *Biological Sciences*, 335(1273), 11-21. https://doi.org/10.1098/rstb.1992.0002
36. Saleem, S., & Saleem, T. (2021). Efficacy of music and quranic verses in reducing cortisol level: A stress biomarker in medical undergraduates. *Current Psychology*. https://doi.org/10.1007/s12144-021-01971-6
37. Sirin, S., Metin, B., & Tarhan, N. (2021). The effect of memorizing the quran on cognitive functions. *The Journal of Neurobehavioral Sciences*, *8*(1), 22. https://doi.org/10.4103/jnbs.jnbs_42_20
38. Squire, L. R., Genzel, L., Wixted, J. T., & Morris, R. G. (2015). Memory consolidation. Cold Spring Harbor Perspectives in Biology, 7(8), a021766. https://doi.org/10.1101/cshperspect.a021766
39. Sternberg, S. (1966). High-Speed Scanning in Human Memory. *Science*, 153(3736), 652–654. https://doi.org/10.1126/science.153.3736.652
40. Tulving, E. (2002). Episodic memory: From mind to brain. Annual Review of Psychology, 53, 1–25. https://doi.org/10.1146/annurev.psych.53.100901.135114
41. ul-Ain Irfan, N., Atique, H., Taufiq, A., & Irfan, A. (2019). Differences in Brain Waves and Blood Pressure by Listening to Quran-e-Kareem and Music. *Journal of Islamabad Medical & Dental College*, *8*(1), 40–44. https://doi.org/10.35787/jimdc.v8i1.315

42. Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. https://doi.org/10.1037//0022-3514.54.6.1063
43. Worthington, E. L. (1988). Understanding the values of religious clients: A model and its application to counseling. *Journal of Counseling Psychology*, 35(2), 166–174. https://doi.org/10.1037/0022-0167.35.2.166
44. Worthington, E. L., Wade, N. G., Hight, T. L., Ripley, J. S., McCullough, M. E., Berry, J. W., Schmitt, M. M., Berry, J. T., Bursley, K. H., & O'Connor, L. (2003). The Religious Commitment Inventory--10: Development, refinement, and validation of a brief scale for research and counseling. *Journal of Counseling Psychology*, 50(1), 84–96. https://doi.org/10.1037/0022-0167.50.1.8
45. Zsido, A. N., Teleki, S. A., Csokasi, K., Rozsa, S., & Bandi, S. A. (2020). Development of the short version of the spielberger state—trait anxiety inventory. *Psychiatry Research*, 291(1), 113223. https://doi.org/10.1016/j.psychres.2020.113223