

## THE EFFECTS OF NEUROTHERAPY (NFT) USING AYATUL KURSI AS STIMULUS ON MEMORY PERFORMANCE

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**Abstract:** *The purpose of the study was to assess the effectiveness of Ayatul Kursi with neurofeedback training (NFT) on memory performance among year two counseling students. In the first phase of the study, pre-test instrument Intelligence Scale Weshler Bellover, the Digit Span and Digit Symbol were administered to measure memory performance of subjects before the Neurofeedback training. A total number of 10 participants went through the pre - test on the same day in a quiet room without any interference in a counseling room. The participants went through neurofeedback training using Ayatul kursi and alpha training protocol with bipolar electrode placement on the frontal lobe (Fp1 and Fp2), an executive function area with attention and judiciary (judgement) as goals for the training. Each participant was trained for five sessions for once a week at the counseling laboratory. Majority showed increased alpha wave at each session based on the data obtained. In the third phase, the post-test was carried out where instrument Intelligence Scale Weshler Bellover the Digit Span and Digit Symbol were administered after the five-training session to see the difference of scores were obtained at pre-test and the post tests. The results showed significant improvements on scores obtained by the participants.*

**Keywords:** *Neurofeedback, Ayatul Kursi, Memory Performance*

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### Introduction

Ayatul Kursi, a verse of 255 from Surah Al-Baqarah, is certainly the most excellent verse of all its verses. Of all the chapters in the Quran, the most excellent chapter is Surah al-Ikhlās, and the most excellent verse is Ayat al-Kursi. One virtue of Ayat al-Kursi is the reward obtained for reading it than any other verse. In Ayatul Kursi, the names of Allah Most Glorified have been mentioned seventeen times. And all the six attributes of Allah (Most Glorified), all six being mentioned in this single verse. The attributes mentioned are: the

Divine Oneness (Wahdaniyyah) of Allah (The Most Glorified), His Life (Hayah), His Knowledge (Ilm), His Kingdom (Mulk), His Divine Power (Qudrah) and His Will (Iradah). [Sharh Sahih Muslim: Fadail al-Quran, under Surat al-Kahf & Ayat al-Kursi. Allamah Ghulam Rasul Saidi]

To find out the effects of Ayatul Kursi on memory, Neurofeedback training were carried out by using Ayatul kursi and alpha training protocol with bipolar electrode placement on the frontal lobe (FP1 and Fp2), an executive function area with attention and judiciary (judgement) as goals for the training. Each participant were trained for five sessions for once a week at the counseling laboratory. EEG biofeedback training is conducted by putting the two electrodes to the scalp based on international 10/20 system. The signals will be processed by the device and connected to computers for monitoring by the trainers.

### **Literature Review**

Neuroscientist Mohamed Ghilan (Majid, 2013) found a link between memorizing Holy Quran, improved thinking and scientific discovery. When learning Holy Quran the careful attention to listening and pronunciation stimulates an area of the brain in the temporal lobe which is the memory consolidation center. The more activation this area receives, such as what occurs when memorizing Holy Quran, the better and more efficient the temporal lobe becomes in its capacity for learning and memory.

Another Study by Abdurrochman A. et al. (2007) on the effect of hearing (classical music, relaxing music and reading al-Quran) during EEG recording using 5 subjects using audio evoked potential (AEP) showed the brainwaves of subjects were dominated by alpha waves while listening to classical music and relaxing music and were dominated by delta waves when listening to recitation of Quran . The researcher argue that reading Quran can be used for the treatment of sleep disorders.

In a similar study, Azamimi Azian Abdullah et al. (2011) have been researching the effects of religious activity on the EEG brain waves. 14 subjects were selected and their brainwaves were measured and analyzed to recite Al-Quran and rock music. The study showed that listening to the recitation of the Qur'an generate Alpha waves and help individuals in a state of calm compared with listening to music.

The process of memorization involves Arabic “Tajweed” which meant that students had to pronounce letters and words correctly by learning how to generate letter sounds from the mouth or throat.

### **Problem Statement**

Some unique features of the glorious Quran relate to its rhythmic sound. Ayats in the Quran rhyme and change rhythm often, which gives a pleasurable effect to the listener. Also the Quran is sung (recited) rather than read as Tajweed forces the reciter to sing in a rhythmic manner in order to enunciate the words accurately. This entire process has been linked to the brain by Mr Ghilan. He noted that the brain is a malleable organ that can change its connections and even the size of certain areas based on how active they become (Majid, 2013). Understanding how involved the brain of someone learning the Quran using the traditional Muslim method becomes, can explain how Muslims were able to achieve such success in their knowledge endeavors.

Listening and pronunciation during memorization stimulates the temporal lobe which contains the hippocampus- the memory centre of the brain (Majid, 2013). This region process musical sounds such as occurs when Holy Quran is recited. As activation of this region increases it becomes better at learning and memorization (Majid, 2013. Mr. Ghilan explained that the parietal lobes also become quite heavily engaged during memorization of Holy Quran. The left parietal lobe processes reading, writing and speech as well as math and logic problems. Remarkably the research has gone beyond the spiritual and moral aspect into what actually takes place in the brain. With practice the brain will do without conscious control from the student. This trains the area of the brain responsible for inhibition, which is important for interacting with people. Studies have shown that children with ADHD have under-development in this area of the brain training was done using neurofeedback for brain activation using game(Norsiah Fauzan &Muhamad Sophian, 2012). There are lack of research looking into the use of Ayatul kursi for brain stimulation using Neurofeedback. Most research has been using Al fatihah, Al mulk and Yassin for relaxation training to relieve stress using the neurofeedback. More research need to be done on the difference of verses from the Quran for healing or increasing the IQ and memory.

## **Objective**

The objective of the study were

1. To find out the difference between reading and listening of Ayatul Kursi while doing the neurofeedback training to increase memory among the second year counseling students.
2. To observe the alpha wave changes during the training using Neurofeedback device.

## **Methodology**

This research is a quasi experimental pretest and posttest design using Weshler Bellevue Intelligence Scale (WBIS) for testing before and after neurofeedback training, the treatment group was given neurofeedback training while the control group was not given the training. The study was conducted at the Counseling laboratory, Faculty of Cognitive Sciences and Human Development (FSKPM), Universiti Malaysia Sarawak (UNIMAS), data and information on neurofeedback training for the experimental group were obtained, analyzed and supervised by a laboratory assistant. Ten counseling students in year two were selected using purposive sampling due to their number of credit hours taken and their complaint of memory problem and stress. Five muslim students were purposely selected to undergo the neurofeedback training due to their ability to read Ayatul kursi and five were in the control group.

### *Instrumentation*

Instruments used to obtain data in the study are Electroencephalography (EEG) and Weshler Bellevue Intelligence Scale (WBIS). WBIS were used to collect data before and after the study whereas EEG neurofeedback training sessions are used to monitor the brain waves and as a training tool during the study while reading Ayatul kursi . Brain wave such as alpha, beta and theta were recorded and transferred in the form of a chart for each of the training session and were averaged at the end of the periods of the training session.

WBIS a scale that is designed to measure the potential intelligence subjects aged 16 to 75 years old. The Instrument has 11 sub-tests and is divided into two aspects, namely verbal scale and scale. Verbal performance has 6 sub test namely information, comprehension, digit

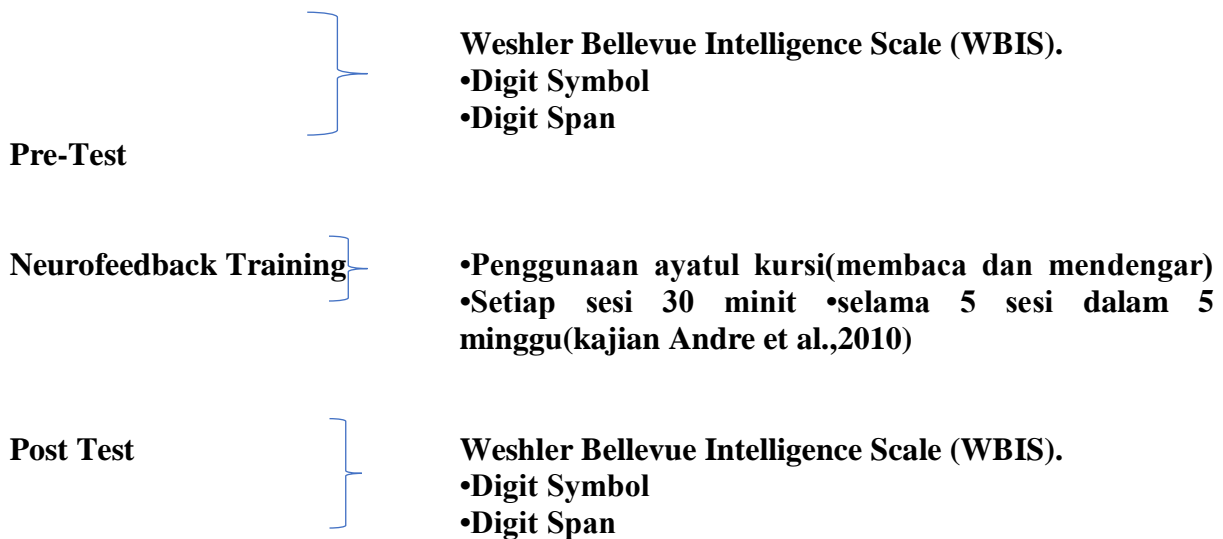
span, arithmetic, similarities, and vocabulary while performance consists of 5 sub tests of picture arrangement, picture completion, block design, object assembly, and digit symbol. Verbal scale measuring general knowledge, language, judgment and memory, while scale performance measure spatial ability, planning and testing

Sub tests selected in this study is the digit symbol and digit span to evaluate the memory performance of the participants. Sub digit span test has two parts backward and forward digits and pre-test and post-test, the subjects were asked to repeat the digits 3-9 forward and 2-9 digits backward. Value were given in numbers.

### *Data Collection Process*

The procedure involved meeting with the subjects to explain the aim of the research and the process involved. The data analysis were done at the end of the study to identify the dominant waves involved while listening to the ayatul Kursi and explaining the results to the subjects.

### **Conceptual Framework**



### **Results and Discussion**

The following section reports the analysis and scores from the Digit symbol and digit span to evaluate the memory performance of the participants. Observation on the EEG pattern of the Alpha were retrieved from statistics extracted from the EEG device and plotted into graphs to show the dominating wave while the participants recited and listened to the Ayatul kursi.

### **Pre-Test Dan Post –Test**

## Digit Span

### Pre-Test Dan Post-Test for Participants Who recites a Ayatul Kursi

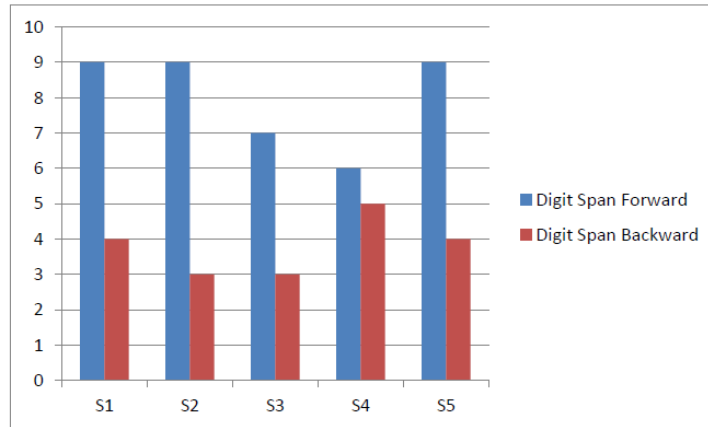


Figure 1 Pre-Test *Digit Span (Recites Al Quran)*

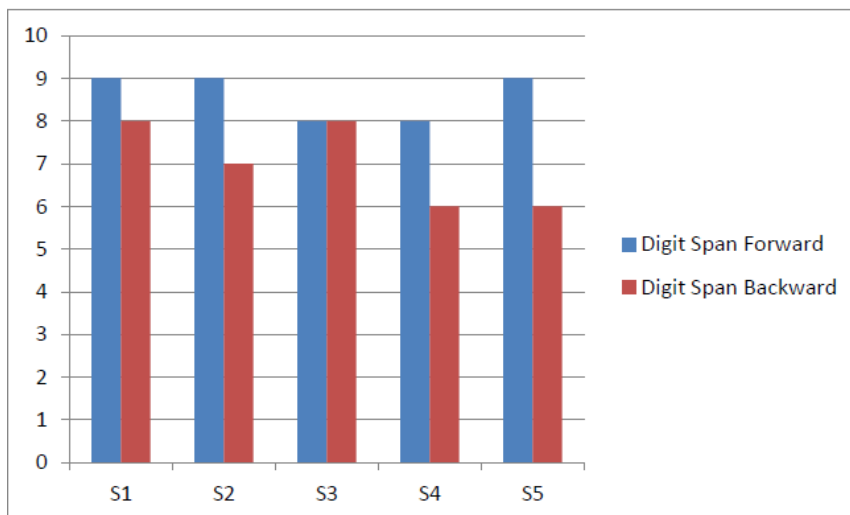


Figure 2 Post-Test *Digit Span (Recites Al Quran)*

**Fig.1** shows the pre-test scores digit span for the participants who read Ayatul Kursi while **Fig. 2** shows the post-test scores for participants who read Ayatul kursi. There is a significant increase of scores obtained by the participants for the digit span forward and backward

### Pre-Test and Post-Test (Listening to Ayatul Kursi)

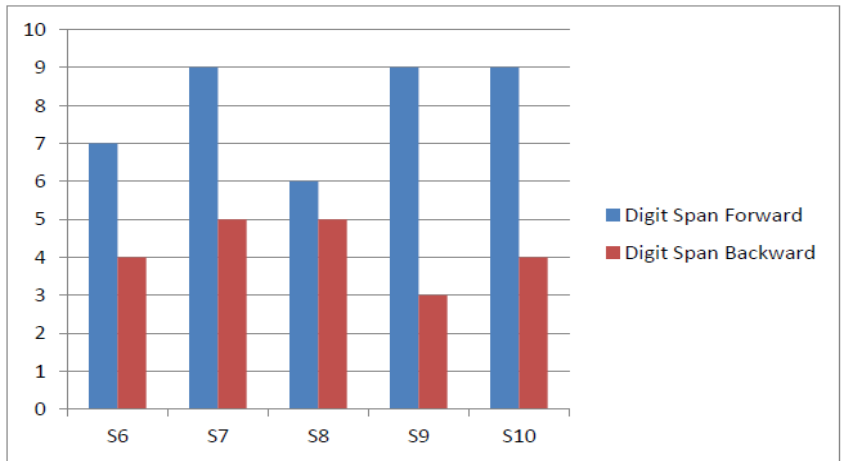


Figure 3 Pre-Test (Listening To Ayatul Kursi)

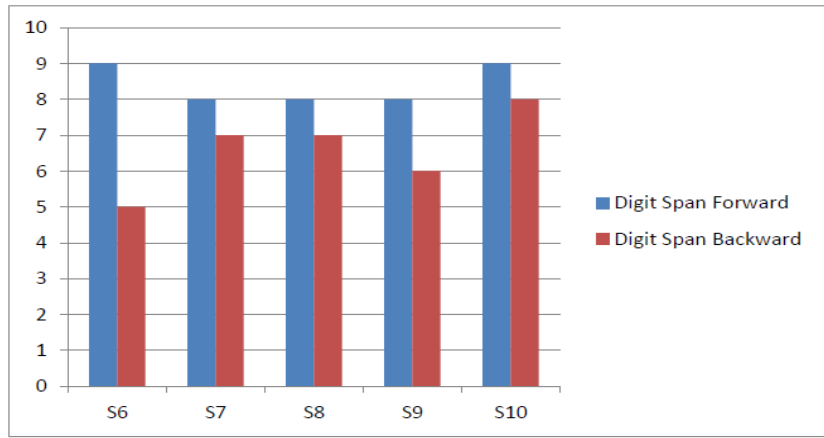


Figure 4 Post-Test (Listening To Ayatul Kursi)

Fig 3 shows the pre-test scores digit span for participants who listen to Ayatul Kursi while Fig 4 shows the post-test scores for participants who listen to Ayatul kursi. There is a significant reduction in the scores obtained by the participants for the digit span backward and significant increase in digit span forward scores . The figures for the pre-test and post-test above, showed that every participants who recites Ayatul Kursi showed an improvement in the scores compared to the group who listen to Ayatul Kursi.

Table 1 Pre-test scores (Digit Span)

Participants	Scores ½ Reaction Time			
	Pretest	Post test	Pretest	Post test
S1	67	66	63.5s.	46.5s
S2	67	57	67s	65.5s
S3	67	67	55s	51.5s
S4	67	64	52.5s	45.5s
S5	67	67	52.5s	50.5s

Table 2 Post-test scores (Digit Span)

Participants	Scores ½ Reaction Time			
	Pretest	Post test	Pretest	Post test
S6	67	67	53.5ss.	46.5s
S7	67	67	54s	54.5s
S8	67	67	57ss	41.5s
S9	67	63	54.5s	49.s
S10	61	67	48s	45..5s

Table 1 and Table 2 shows the score and the time taken by the participants to complete the instrument Digit symbol for the pre-test and post-test. The time taken to show significant changes and the score obtained is the opposite. Based on the table given above, the participants who read and listen to Ayatul Kursi shows the time taken to complete these instruments were quicker but is behind the scores obtained for participants S1, S4 and S9.

### ***Observation on Alpha Waves (Reward ) and Hi Beta (High Inhibit) During the Training***

Observation using EEG device showed an ascending trend of alpha wave (Red line) and inhibition of Hi-beta (Green line) when the five participants were reciting ayatul kursi (Experimental) and listening (control group) in the initial and final training session. These can be seen in Graphs displayed in Fig.5a,b,c,d,e,f,g, h,I, &j. and Fig.6a,b,c,d,e,f,g, h,I, &j. The blue line shows the low inhibit (delta wave) in the background indicating slow rhythmic wave of the participants involved during the training.

### ***Initial Training Session***

#### **Reciting ayatul Kursi (Experimental Group)**

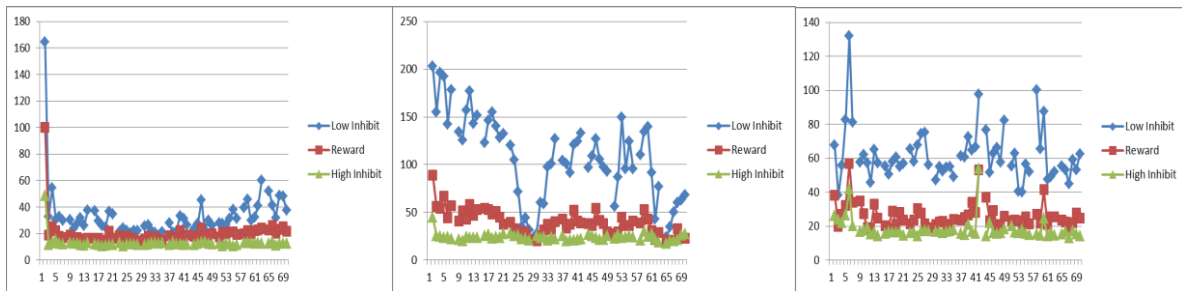


Figure 5.(a) subject 1

Figure 5.(b) Subject 2

Figure 5.(c) Subject 3

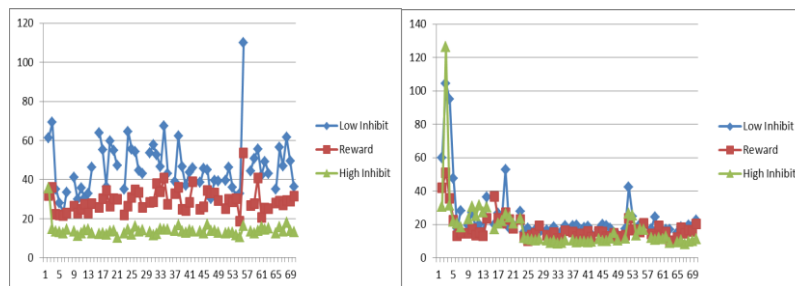


Figure 5.(d) Subject 4

Figure 5.(e) Subject 5

#### **Listening to Ayatul Kursi (Control Group)**

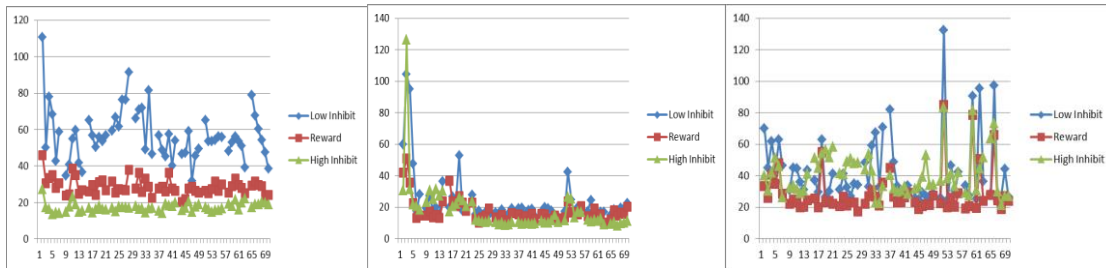


Figure 5.(f) subject 6

Figure 5.(g) subject 7

Figure 5.(h) subject 8

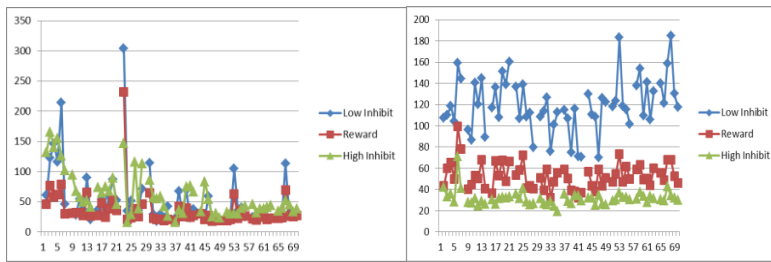


Figure 5.(i) subject 9

Figure 5.(j) subject 10

### *Final Training Session*

### *Reciting Ayatul Kursi*

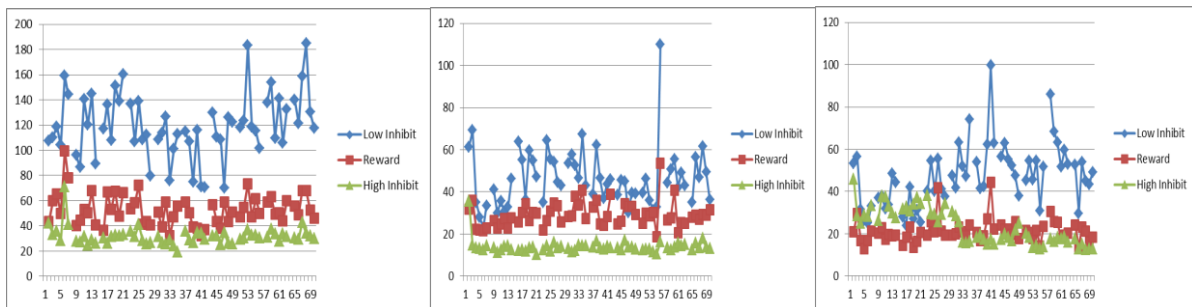


Figure 6.(a) subject 1

Figure 6.(b) Subject 2

Figure 6.(c) Subject 3

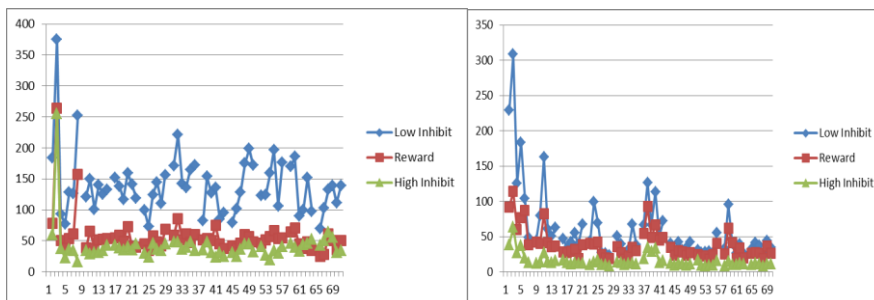


Figure 6.(c) subject 4

Figure 6.(d) Subject 5



## Listening to Ayatul Kursi (Control group)

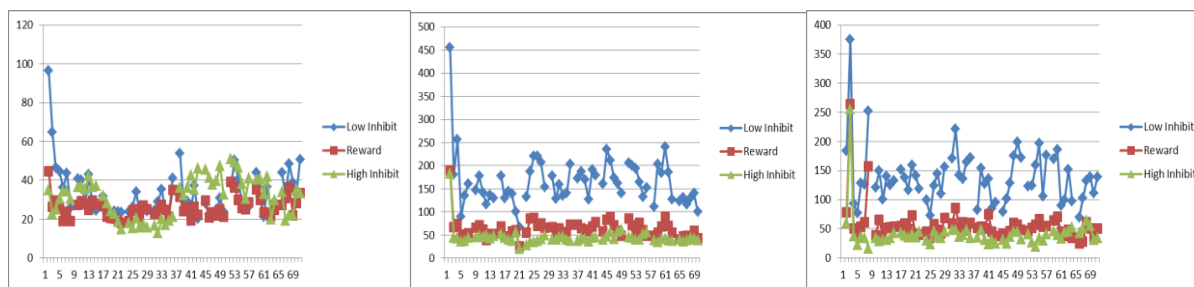


Figure 6.(e) subject 6

Figure 6.(f) Subject 7

Figure 6(g) Subject 8

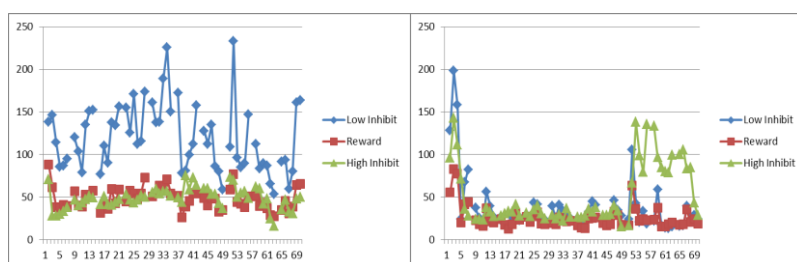


Figure 6.(h) subject 9

Figure 6.(i) Subject 10

The training were carried out at the Frontal lobe (Fp1 Fp2) area, the alpha wave (Red line) increases and successfully inhibit hi beta wave (Green line). Recitation of Ayatul kursi stimulate the production of Alpha waves, the participants needed to calm down to process the information. Reseach by Ghilan (Majid, 2013) indicate that the reciting the Quranic verse strongly activates the frontal lobes. The frontal lobes deal with higher order functions such as working memory, memory retrieval, speech production and written-word recognition, sustained attention, planning and social behavior. Furthermore, recitation helps (Majid, 2013) in the activation of this region to become better at learning and memorization. Another study by Kaheel (2017) stated that brain cells is vibrating and reacting with the voice of the Holy Quran. He was memorizing the Holy Quran using the technique of listening and repeating the chapter many times and found that the verses of the Holy Quran were getting easily into his memory. In this research, ayatul kursi was recited and listened to the participants repeatedly for 5 sessions. Based on Ghilan's study (cited in Majid, 2013). listening and pronunciation during memorization stimulates the temporal lobe which contains the hippocampus- the memory centre of the brain. This is the same region used to process musical sounds such as occurs when Holy Quran is recited. Also as the student writes, the same region is activated thereby increasing the person's aptitude for learning new information. As activation of this region increases it becomes better at learning and memorization.

## Conclusion

This study involved the use of Al-Quran as a catalyst to increase memory performance through neurofeedback training. The findings showed the relationship between al-Quran verses and memory as specified in the results discussed. The recitation of the Quranic verse stimulates the generation of Alpha waves and a more relaxed atmosphere that allows an individual to learn in a calm state and retrieve the information needed for problem solving. In conclusion, this study showed that neurofeedback training and the application Ayatul Kursi for the stimulus affects memory improvement among the participants. There is a difference between the effects of Ayatul Qursi during the recitation and listening during the training.

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