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# The Effects of Different Reciting Styles of Quran on Emotions among University Students

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**Abstract**
This study examined the effects of Quran recitation on the Heart Rate Variability (HRV) of 30 undergraduate students who study in University Malaysia Pahang (UMP). One of the important effects of the Quran on student learning and achievement is reflected in emotions. Emotions control the attention of students, influence their motivation to learn, modify their choice of learning strategies and affect their self-regulation of learning. Furthermore, emotions are part of student identity, and they affect personality development, psychological health and physical health. Repeated measures quasi experimental design method was conducted, thirty undergraduate students whom participated in the test were divided into two groups; good Quran reciters group and weak Quran reciters group, every student has been attending four sessions. In the first session, the reciter focused on Tajweed rules, the second session student focused on some stories in a certain Surah, third session focused on certain verses of heaven, hell and punishment in Quran, and last session focused on understanding the meaning of the Quran and at the end of this session the student reads text from a newspaper. The parameters of heart rate variability (HRV) were measured to examine the outcome. The results show a clear difference in HRV data between good and weak readers, good readers have control of their heart actions and reactions. Thus, the good reciter students have high score in HRV and better control of their heart function. The conclusion of this study showed that the Quran recitation significantly effects on the emotions of Quran reciters. Quran effects on psychological comfort for students by increased relaxation and reduced stress

**Introduction**
This research aims to test the effects of different verses and reading styles of the Quran on emotions, examine the effects of Quran recitation on the heart rate variability (HRV) among university students. The Quran, the word of Allah, is the light and guidance that promotes tranquillity of the heart. The Quran provides reassurance and comfort and distances people from concerns, anxieties and depression. The prevention and pre-emption of the occurrence of disease

or aggravation is undoubtedly one of the basics of mental health and psychotherapy. At present, such an approach is found to be assertive and integrated and is accurately detailed in a Quran approach to protect individuals from mental illness and other illnesses and delinquency. God said, 'the remembrance of Allah do hearts find rest,' and THeker keep their prayers on time 'and keep up prayer for the remember me;' the latter recites the Quran because the heart that have nothing from the Quran is like a ruined house (Alsaboney, 2007).

Listening to the Holy Quran recitation is highly recognizable Islamic repentance to the Muslim community. Undoubtedly, these beliefs can flourish people's mind and soul. Therefore, this repentance has a miraculous power to reduce anxiety and stress like psychological pessimistic matters from one's mind. Besides this, listening to the Holy Quran recitation can relieve and calm a disturbed mind. Consequently, this repentance may be used as the therapeutic agents in some cases (Nayef & Wahab, 2018; Salam, Wahab, & Ibrahim, 2013).

So, teaching how to recite it correctly was transmitted (Nayef et al., 2013), since its revelation to the prophet (PBUH), orally from teachers to learners throughout generations. Such a method has been considered as the only way to learn it until the twentieth century, where technology produced recording systems and electronic devices that are able to keep both text and sound of the Quran with "Tajweed" rules. Since then, it becomes possible to listening Quran recitations recorded from authentic reciters (Abdullah & Omar, 2011). Emotions are important because of their influence on learning and development, but student emotional wellbeing should also be regarded as an important educational (Pekrun, 2014).

Positive thinking is looking at the bright side of situations, making a person constructive and creative. It is related to positive emotions and other constructs, such as optimism, hope, joy and wellbeing. Positive thinking is a generic term referring to an overall attitude reflected in thinking, behaviour, feeling and speaking. Furthermore, it is a mental attitude that admits into the mind thoughts, words and images conducive to growth, expansion and success (Naseem & Khalid, 2010). In cases where patients cannot speak for themselves, their physiological parameters are measured through their emotional status (Sharma & Kapoor, 2014).

HRV biofeedback training teaches people to recognise their involuntary HRV and to control patterns of their physiological responses. Several HRV training strategies can effectively be used to increase cardiac variability in a health-enhancing manner, including resonant frequency training (P. Lehrer, Vaschillo, & Vaschillo, 2000), psychophysiological or heart rhythm coherence feedback (McCraty, Atkinson, & Tomasino, 2003) and inherent harmonics or oscillatory biofeedback (Suvorov, 2006). All these strategies have been successfully applied not only in clinical settings but also in various domains (McCraty & Tomasino, 2004) and have presented psychophysiological coherence in facilitating people in developing a great awareness on the connection among their emotions, physiology and behaviour. This strategy has been effective in reducing musical performance anxiety (Thurber, 2006), increasing test scores in high school students (McCraty, Dana, Mike, Pam, & Stephen, 2000) and improving sport performance (McCraty & Tomasino, 2004; Tanis, 2008). In workplace setting, (Barrios-Choplin, McCraty, & Cryer, 1997) found that HRV biofeedback combined with emotional regulation techniques increase worker productivity and decrease symptoms of stress among company workers comprised of managers, engineers and factory workers. Moreover, emergency assistance doctors have benefited in terms of adaptive biological regulation with oscillatory biofeedback from psychophysiological training prior to and during 24-hour duty shifts (Suvorov, 2006).

Furthermore, the resonant frequency training strategy has been successfully applied in improving the performance of baseball hitters (Strack, 2003) and the cognitive performance of female university students in a pilot study (Sutarto & Abdul Wahab, 2008). These previous studies have promised and indicated the possible effectiveness of using HRV biofeedback in workplace settings. HRV biofeedback equips operators with skills to counteract the adverse effects of daily stressors or other block factors on their cognition during work.

HRV represents beat-to-beat changes in interbeat intervals (Billman, 2011). Beat-to-beat variability is affected by autonomic nervous system (ANS) activity. Scientists have agreed that interactions at the heart reflect ANS balance or imbalance in the body in general (Berntson et al., 1997). Optimum variability in heart rate is crucial because diminished HRV indicates susceptibility to physical and psychological stressors and disease (P. M. Lehrer, 2007). By contrast, high HRV has been linked with creativity, psychological resilience and a developed capacity to control affective, cognitive and physiological stress (Appelhans & Luecken, 2006; Hansen, Johnsen, & Thayer, 2003).

The *Quran* is full of verses that emphasise relaxation and a means of achieving tranquillity. It is full of stories about people placed in stressful situations with specific strategies on how to overcome stress. These characteristics led the World Health Organization to advice Islamic countries in the Regional Mental Health Summit held in 1998 in the Eastern Mediterranean Region to prepare a booklet containing mental health-related Quran verses. Despite the great amount of research on the relationship between religious attitudes and psychological variables, investigation on conducted studies and sources shows that very little scientific research about the psychological effects of the Quran is available (Mottaghi, Esmaili, & Rohani, 2011)

 Muslim practice reciting al-Quran and believe it to be a way to alleviate stress or bad emotion and recover from sickness (Heidari, Shahbazi, & Bahrami, 2014). Few studies have been done on the relationship between listening to recite *Quran* with various psychological variables (like anxiety and stress) among university staff or patients. (Abu Bakar, 2014; Ariff, Mai Ashikin, Maryamjameelah, Bushra, & Wan Azman, 2013; Darabinia, Gorji, & Afzali, 2017). Therefore, this study aims to examine the effects of *Quran* recitation on heart rate variability and breathing behaviours as indicators of student emotions (stress and relaxation). And since the study on the effect of *Quran* recitation is not well studied so is very important to investigate the effect of *Quran* recitation towered emotions or psychological effect of the reader. Thereby the extending research findings on the effects of religious activities among university students, specifically, capability of recitation *Quran* to reduce bad emotion like stress and anxiety will examine.

**Methodology**

In this study, the effects of Quran recitation on the HRV of 30 students were evaluated. The student underwent four sessions lasting approximately 30 minutes each including baseline, rest time between parts, in which he/she  as a readers recites certain surah or verses from the Quran. The all sessions comprised three parts lasting approximately 5 minutes each. In all sessions, the baseline coherence ratio (CR) and accumulate coherence score (ACS) were measured within the 2-3 minutes, before reading started.

During the first session, the reader focused on Tajweed. The first part was about Maad, from Almaida Surah (13–40). The second part was about Waqf, from Almaida surah (51–87). The last part was about Maad, Waqf and other types of Tajweed verses from Annur Surah (21–41).

During the second session, the readers focused on a certain story for each part. The first part featured the story from Albaqarah Surah (47–66) about the prophet Musa and his people who were the Jews. The second part featured the story from Alkahf Surah (60–82) about the prophet Musa and the pietistic man Al Kuder. The last part featured the story from Yusuf Surah (1–21) about the prophet Yusuf and his brothers.

 The third session features certain verses about heaven, hell and the punishment given to those who do not believe in thir prophets. The first part featured certain verses about heaven from Alrahman Surah (29–78) and Alwaqiah Surah (10–40). The second part featured certain verses about hell from Almursalat Surah (1–50). The last part featured verses about the previously mentioned punishment from Hud Surah (50–83).

Finally, the fourth session is about understanding the meaning of the given Quran verse. During the first part, the readers recited the original Alkahf Surah (1–20) verses without understanding what they mean as they were in a different language. Then, during the second part, the readers recited the same verses but after he/she reads the translated Quran verses. The third part is about reading a text from newspaper for 5 minutes.

**HRV Biofeedback Instrument**

Before the HRV biofeedback data collection sessions, the letter of consent that included information about the data collection procedure, schedule and the sessions was given to the volunteer participants to ensure careful consideration. The emWave tool and the emWave PC biofeedback (1.0) software developed by the HeartMath Institute for heart-rhythm variations were used in HRV data collection. According to Reyes (2014), the emWave is a portable device that helps individuals monitor HRV and rehearse biofeedback techniques. In the present study, the HRV data were separately collected from the volunteer participants under a particular session protocol. The emWave device is capable of measuring the pulse of an individual by placing the sensor of the tool on his or her ear and of detecting HRV patterns of spaces between heartbeats (Ross, 2011). According to Ross (2011), use of the emWave for HRV assessment under the HeartMath Institute process is unquestionable and quantitatively effective. Through various studies, the HeartMath Institute has provided evidence demonstrating the effective role of healthy hearts on the well-being and balanced lives of individuals. The emWave tool and other kinds of biofeedback technology of the HeartMath Institute are valid based on various academic studies on biofeedback, stress and emotions that were conducted in the last 17 years (HeartMath.org, 2016).

Researchers and scholars (e.g. McCraty and Shaffer, 2015; Reyes, 2014; Ross, 2011; Porges, 1997) have used various types of HRV biofeedback technology, including the emWave device and software, in their studies on different fields and various perspectives, such as health, psychology, education, sports and the military. Results from their studies confirmed the effectiveness of the use of emWave and other types of biofeedback technology on human performance, enabling individuals to assess the movement and reactions of their heart. Figures 1 and 2 show the emWave PC tool and its ear sensor, respectively, the pictures used in which were taken from the official page of the HeartMath Institute (2015). Figure 3 illustrates the image of the reciter During HRV test.

Figure 1 emWave PC tool



Figure 2 ear sensor for emWave PC tool
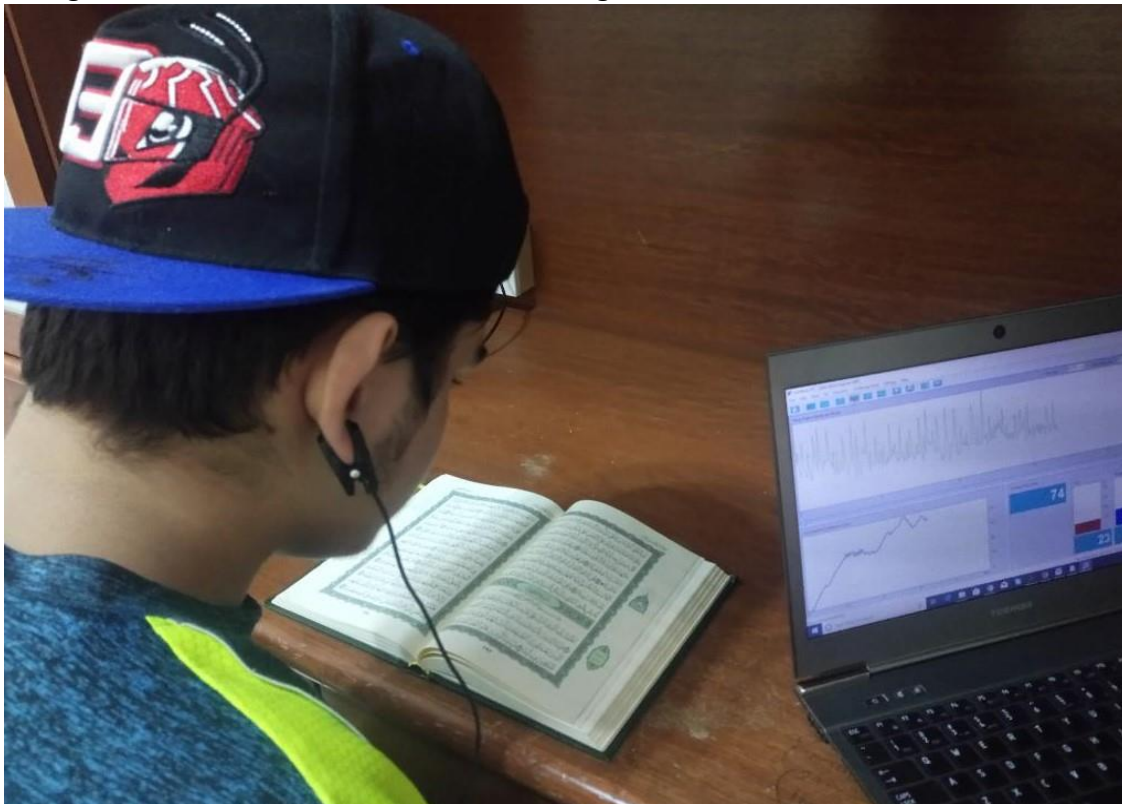


Figure 3 Image of the reciter During HRV

**Results and Discussions**
**HRV Results**
All students of the HRV section of this study are UMP undergraduate students. They all received four sessions of the HRV test. In the first session, the reader focused on Tajweed (i.e. Madd and Waqf). This session is divided into three parts. The first part focused on Madd, in which the student recited from Al-Maida Surah. The second part focused on Waqf, in which the student recited from Al-Maida Surah. The third part focused on Madd and Waqf, in which the student recited from Annur Surah.

In the second session, the student focused on some stories in a certain Surah (e.g. Al-Baqarah, Yusuf and Al-Kahf). This session is divided into three parts. The first part focused on Al-Baqarah Surah, the story about Prophet Musa and the Jewish people. The second part focused on Al-Kahf Surah, the story about Prophet Musa and the Pietist Man (Alkoder). The third part focused on Yosuf Surah, story of Prophet Yosuf and his brothers.

The third session focused on certain verses of heaven, hell and punishment of people who do not believe in prophets. This session is divided into three parts. The first part focused on certain verses of heaven from Al-Rahman Surah and Al-Waqiah Surah. The second part focused on certain verses of hell from Al-Mursalat Surah. The third part focused on certain verses of punishment of people who do not believe in the prophets from Hud Surah.

The fourth session focused on understanding the meaning of the Quran. This session is divided into three parts. In the first part, the reader recites some verses without understand the meaning. In the second part, the reader recites the same verses. After reading the Tafseer, the reader recites from Al-Kahf Surah. In the third part, the student reads the text of a newspaper.

Not all of the students can recite the Quran properly. Thus, they are divided into two groups (i.e. good and weak Quran recitation) to compare the effects of Quran recitation on the HRV scores of the students and to determine if a relationship exists between Quran recitation and HRV.

The use of HRV biofeedback technology also helped the participants in focusing on their internal abilities, particularly heart function; increasing control of their emotional situation; and improving their skills. These findings are supportive of the argument of Lagos et al. (2008) who stated that individuals with high HRV scores have better creativity, psychological flexibility and personal skills than individuals with low HRV scores.

In Figure 3 and Figure 4, the red colour denotes the very low frequency (VLF), the blue colour denotes the low frequency (LF) and the green colour denotes the high frequency (HF). Based on the HRV power spectrum, people with frequent high scores in VLF (in red colour) have poor HRV and people with high scores in LF (in blue colour) and moderate scores in HF (in green colour) have good HRV and human performance. Moreover, individuals who are able to change their VLF (in red colour) to LF (in blue colour) and HF (in green colour) have control of their heart actions and reactions and have desirable HRV scores (McCraty and Shaffer, 2015). Figure 4 shows students with high HRV scores. The results Shows that the good reciting students had high HRV and better control of their heart function, and through they good control of their heart action and reaction, their HRV increased. However, as illustrated in Figure 5 shows student with low HRV scores, the weak reciting students had low HRV scores even though they had high scores in the beginning and in the baseline session of HRV. During other sessions, thy lost control on their heart function and their high score decreased and their low score increased.
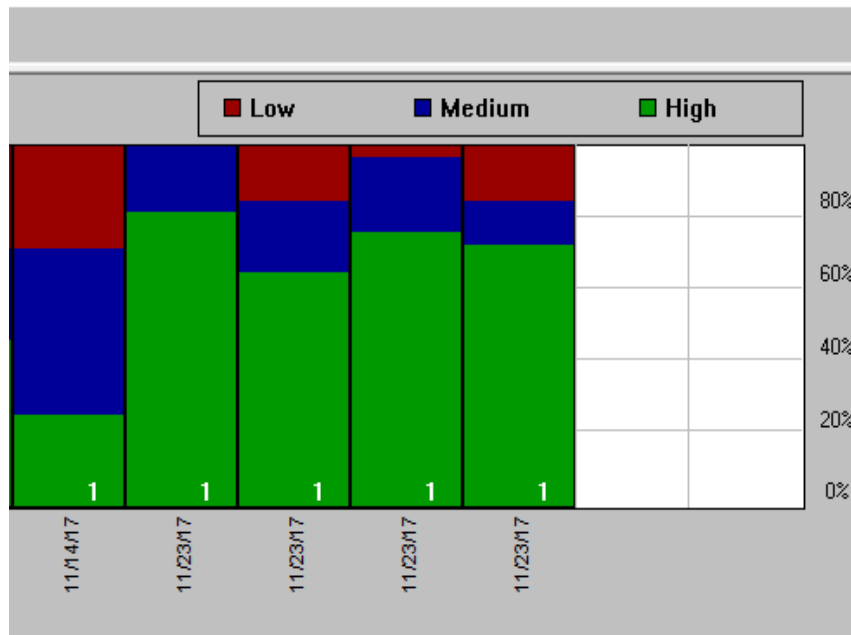
Figure 4 Students with high HRV scores
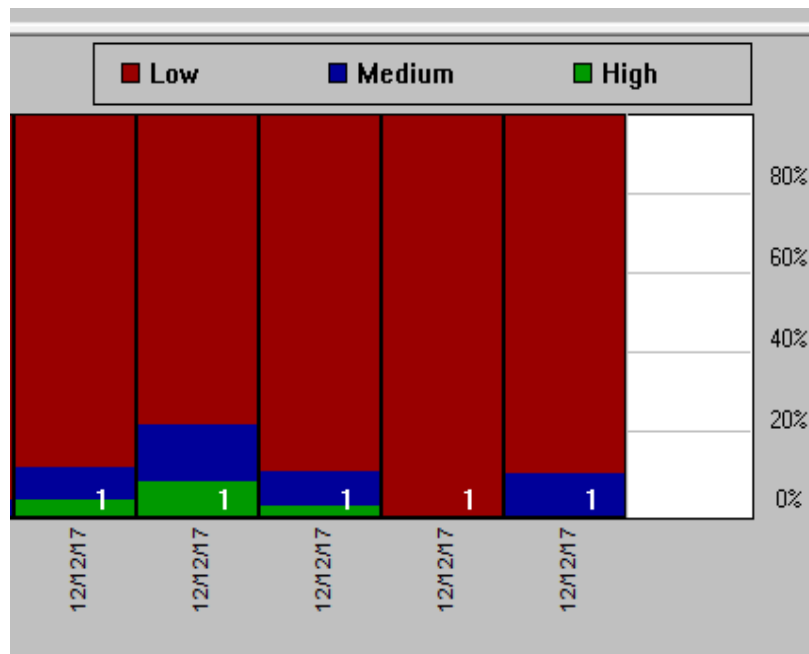


Figure 5 Student with low HRV scores

Accumulated Coherence Score as shown in Figure 6 and Figure 7, students with high HRV scores have high accumulated coherence score and students with low HRV scores have low accumulated coherence score.
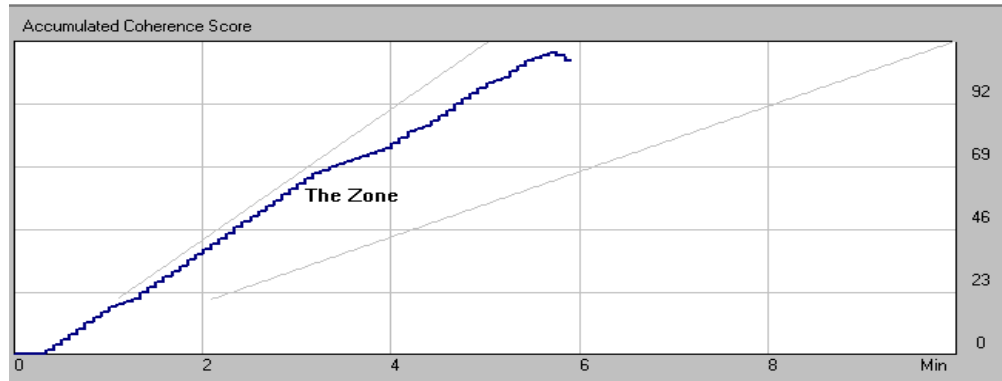
Figure 6 Students with high HRV scores.
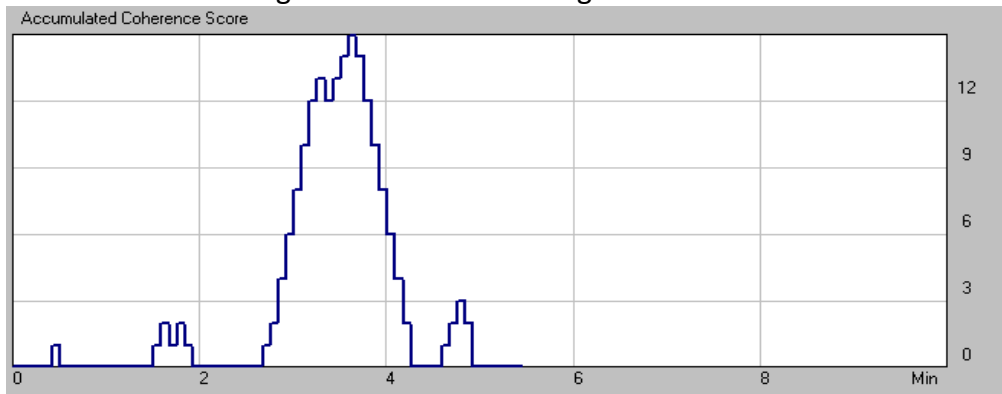

Figure 7 Students with low HRV scores.

**Tajweed and HRV**

In the first session, the reader focused on Tajweed (i.e. Madd and Waqf). According to the statistical findings from the HRV data for the first session (Tajweed) (Table 1), the good reader's results show that the score is HF for all of the three parts in this session. The first reading accumulated coherence score was 61.4, the second reading accumulated coherence score was 74.2 and the third reading accumulated coherence score was 76.66. The coherence ratio scores were 68.93, 74.13 and 75.26 for all of the three parts of this session.

Table 1 HRV data for the first session (Tajweed).

| | Session 1 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base | | R1 | | R2 | | R3 | |
| GR/WR | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| GR | 2 | 8 | 48 | 64 | 95 | 100 | 70 | 83 |
| GR | 8 | 80 | 105 | 80 | 133 | 86 | 75 | 73 |
| GR | 0 | 0 | 90 | 76 | 120 | 86 | 180 | 93 |
| GR | 6 | 50 | 21 | 32 | 91 | 72 | 160 | 90 |
| GR | 21 | 100 | 74 | 76 | 27 | 51 | 68 | 68 |
| GR | 20 | 65 | 17 | 64 | 8 | 51 | 22 | 69 |
| GR | 7 | 50 | 43 | 63 | 100 | 79 | 48 | 56 |
| GR | 11 | 52 | 78 | 90 | 85 | 99 | 75 | 91 |
| GR | 19 | 100 | 13 | 31 | 28 | 53 | 33 | 59 |
| GR | 6 | 40 | 115 | 85 | 73 | 69 | 65 | 65 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GR | 8 | 80 | 17 | 64 | 85 | 99 | 76 | 91 |
| GR | 22 | 101 | 105 | 80 | 8 | 51 | 68 | 68 |
| GR | 10 | 51 | 43 | 63 | 27 | 51 | 75 | 74 |
| GR | 19 | 65 | 77 | 90 | 103 | 79 | 60 | 58 |
| GR | 8 | 50 | 75 | 76 | 130 | 86 | 75 | 91 |
| WR | 3 | 13 | 12 | 30 | 28 | 53 | 56 | 87 |
| WR | 1 | 5 | 1 | 4 | 3 | 6 | 2 | 4 |
| WR | 11 | 50 | 9 | 45 | 27 | 56 | 16 | 44 |
| WR | 12 | 90 | 50 | 57 | 65 | 68 | 20 | 38 |
| WR | 21 | 70 | 7 | 12 | 27 | 59 | 36 | 58 |
| WR | 17 | 45 | 12 | 37 | 17 | 51 | 17 | 33 |
| WR | 12 | 72 | 26 | 53 | 18 | 43 | 60 | 68 |
| WR | 5 | 15 | 11 | 21 | 10 | 30 | 5 | 34 |
| WR | 10 | 51 | 50 | 57 | 10 | 30 | 5 | 34 |
| WR | 2 | 6 | 2 | 5 | 27 | 60 | 55 | 87 |
| WR | 22 | 69 | 8 | 44 | 65 | 67 | 3 | 4 |
| WR | 11 | 89 | 12 | 21 | 29 | 53 | 16 | 44 |
| WR | 6 | 16 | 12 | 29 | 16 | 51 | 21 | 38 |
| WR | 4 | 12 | 11 | 16 | 27 | 55 | 35 | 58 |
| WR | 16 | 44 | 8 | 12 | 3 | 7 | 16 | 33 |

| Session 1 (AVG) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base | | R1 | | R2 | | R3 | |
| | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| AVG GR | 11.13 | 59.46 | 61.4 | 68.93 | 74.2 | 74.13 | 76.66 | 75.26 |
| AVG WR | 10.2 | 43.13 | 15.4 | 29.53 | 24.8 | 45.93 | 24.2 | 44.26 |

By contrast, the weak reader's results show that the score is LF and VLF for all of the three parts in this session. The first reading accumulated coherence score was 15.4, the second reading accumulated coherence score was 24.8 and the third read accumulated coherence score was 24.2. The coherence ratio scores were 29.53, 45.93 and 44.26 for all of the three parts of this session.

The difference between good and weak readers in the Tajweed session is shown in Figure 8 and Figure 9. The good readers have high HRV score and the weak readers have low HRV score. In the figure, the good readers are denoted in blue colour and the weak readers are denoted in red colour.
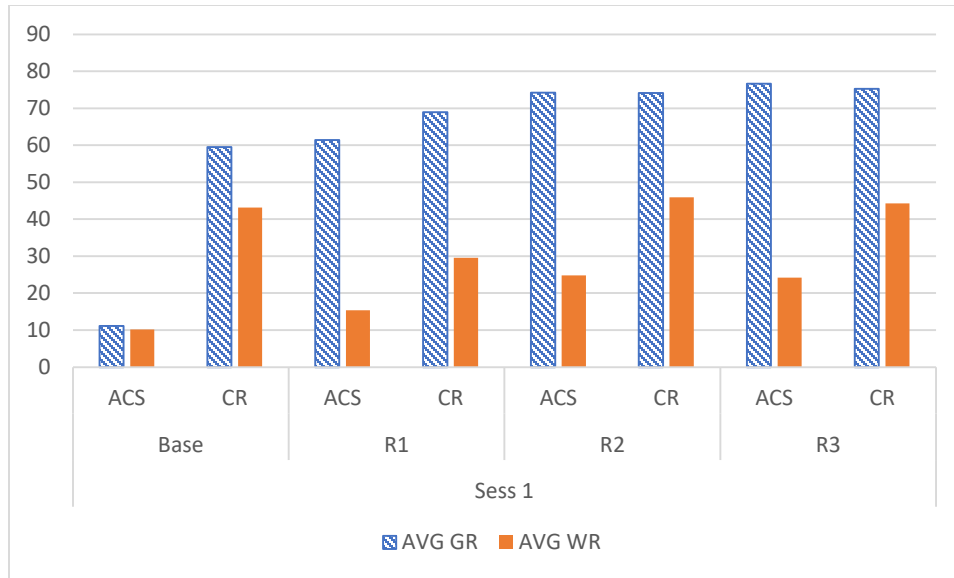
Figure 8 ACS and CR for session 1.
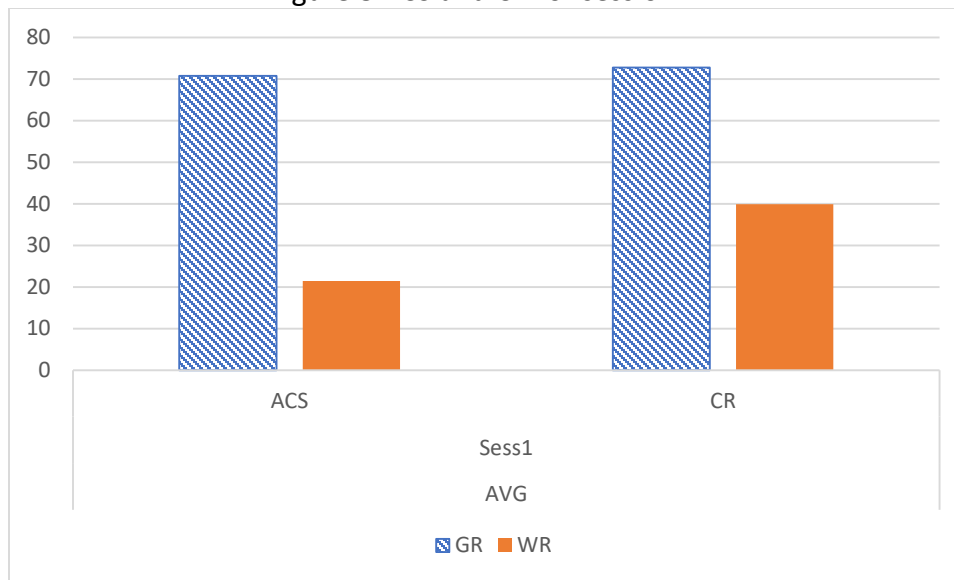


Figure 9 Difference in HRV between good and weak readers

**Story and HRV**

In this session, the students read the Tafseer of the Surah before they start reciting. The HRV data for the second session (story) are shown in Table 2.

Table 2 HRV data for the second session (story).

| | Session 2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base | | R1 | | R2 | | R3 | |
| GR/WR | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| GR | 6 | 0 | 27 | 30 | 36 | 65 | 44 | 62 |
| GR | 18 | 53 | 50 | 69 | 95 | 93 | 95 | 93 |
| GR | 6 | 41 | 45 | 75 | 28 | 46 | 30 | 61 |
| GR | 9 | 48 | 18 | 41 | 9 | 28 | 21 | 55 |
| GR | 11 | 59 | 55 | 84 | 27 | 60 | 52 | 76 |

| | | | | | | | | |
|----|----|----|----|----|-----|----|----|----|
| GR | 14 | 56 | 5 | 23 | 6 | 16 | 12 | 21 |
| GR | 19 | 36 | 2 | 4 | 30 | 66 | 32 | 45 |
| GR | 11 | 56 | 64 | 84 | 100 | 99 | 90 | 94 |
| GR | 10 | 62 | 69 | 86 | 18 | 57 | 60 | 82 |
| GR | 7 | 43 | 90 | 88 | 58 | 72 | 36 | 50 |
| GR | 13 | 56 | 50 | 69 | 6 | 16 | 95 | 93 |
| GR | 18 | 54 | 63 | 85 | 27 | 61 | 13 | 20 |
| GR | 19 | 36 | 6 | 24 | 100 | 99 | 32 | 46 |
| GR | 10 | 56 | 3 | 5 | 31 | 65 | 53 | 78 |
| GR | 11 | 60 | 54 | 84 | 94 | 94 | 91 | 95 |
| WR | 0 | 0 | 23 | 38 | 11 | 37 | 11 | 25 |
| WR | 7 | 39 | 17 | 38 | 49 | 74 | 27 | 61 |
| WR | 6 | 19 | 50 | 74 | 60 | 79 | 24 | 64 |
| WR | 8 | 28 | 13 | 29 | 9 | 12 | 50 | 59 |
| WR | 21 | 76 | 7 | 24 | 23 | 49 | 9 | 54 |
| WR | 2 | 9 | 32 | 65 | 24 | 63 | 34 | 64 |
| WR | 6 | 29 | 16 | 26 | 13 | 22 | 11 | 32 |
| WR | 16 | 46 | 74 | 91 | 95 | 90 | 95 | 93 |
| WR | 16 | 47 | 49 | 74 | 9 | 13 | 34 | 63 |
| WR | 0 | 0 | 17 | 36 | 10 | 37 | 10 | 26 |
| WR | 8 | 39 | 12 | 29 | 49 | 73 | 50 | 59 |
| WR | 7 | 19 | 8 | 25 | 95 | 90 | 27 | 60 |
| WR | 20 | 76 | 33 | 65 | 23 | 49 | 24 | 65 |
| WR | 3 | 9 | 74 | 91 | 24 | 62 | 9 | 54 |
| WR | 8 | 29 | 23 | 38 | 60 | 80 | 95 | 93 |

| | Session 2 (AVG) | | | | | | | |
|--------|-------|-------|-------|-------|-------|-------|------|-------|
| | Base | | R1 | | R2 | | R3 | |
| | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| AVG GR | 12.13 | 47.73 | 40.06 | 56.73 | 44.33 | 62.46 | 50.4 | 64.73 |
| AVG WR | 8.53 | 31 | 29.86 | 49.53 | 36.93 | 55.33 | 34 | 58.13 |

The good reciters results show that the score is HF for all of the three parts in this session. The first reading accumulated coherence scores were 40.06, 44.33 and 50.4 for the three parts of this session. The coherence ratio scores were 56.73, 62.46 and 64.73 for all of the three parts of this session.

The weak reader's results show that the coherence ratio score is LF and HF for all of the three parts in this session. The first reading accumulated coherence score was 29.86, the second reading accumulated coherence score was 36.93 and the third reading accumulated coherence score was 34. The coherence ratio scores were 49.53, 55.33 and 58.13 for all of the three parts of this session.

The difference between good and weak readers in the story session is shown in Figure 10 and Figure 11. The good readers are denoted in blue colour and the weak readers are denoted in red colour.
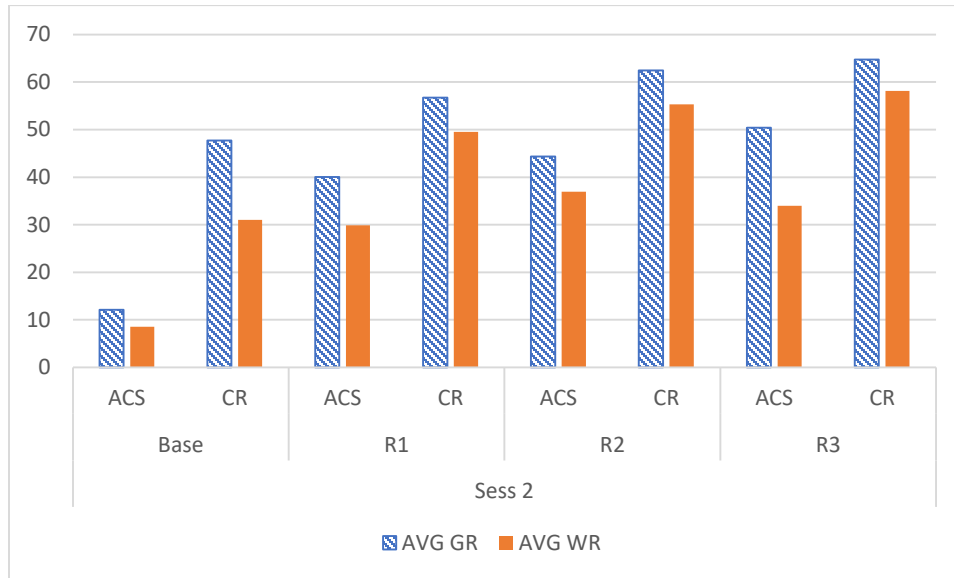


Figure 10 ACS and CR for session 2.
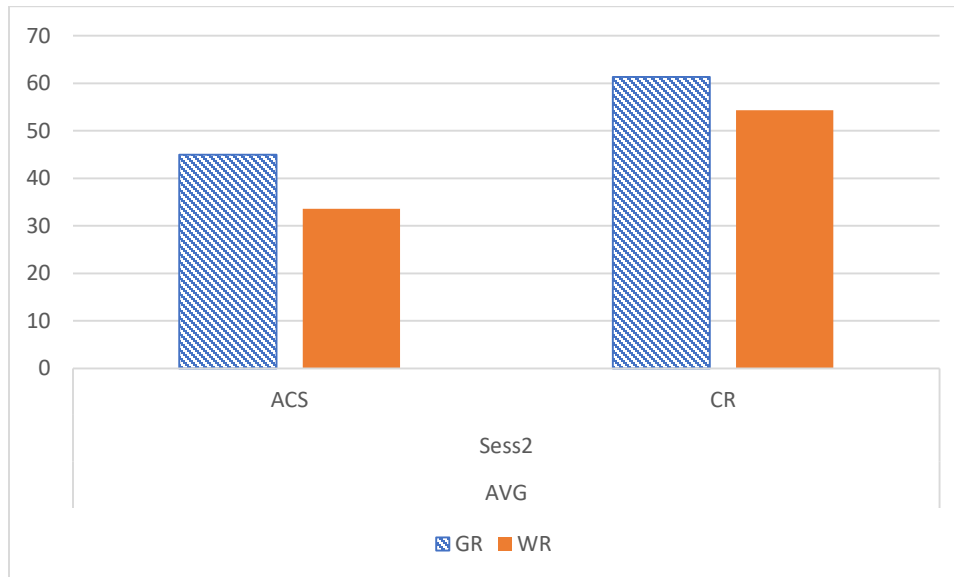


Figure 11 Difference between good and weak reader students

**Theme and HRV**

In the third session, the student recites certain verses about heaven, hell and punishment of people who do not believe in prophets. The HRV data for this session are shown in Table 3.

Table 3 HRV data for the third session (theme)

| | Session 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base | | R1 | | R2 | | R3 | |
| GR/WR | ACS | CR | ACS | CR | ACS | CR | ACS | CR |

| GR | 20 | 53 | 38 | 66 | 35 | 59 | 35 | 67 |
|----|----|----|-----|----|----|----|----|----|
| GR | 28 | 85 | 50 | 69 | 55 | 71 | 48 | 72 |
| GR | 2 | 10 | 100 | 97 | 36 | 62 | 14 | 49 |
| GR | 9 | 21 | 36 | 76 | 9 | 42 | 34 | 59 |
| GR | 23 | 76 | 38 | 68 | 26 | 67 | 65 | 78 |
| GR | 40 | 100 | 100 | 99 | 36 | 80 | 80 | 90 |
| GR | 18 | 52 | 18 | 51 | 22 | 49 | 15 | 44 |
| GR | 0 | 0 | 15 | 27 | 13 | 18 | 20 | 56 |
| GR | 2 | 9 | 24 | 54 | 17 | 48 | 40 | 72 |
| GR | 4 | 19 | 19 | 32 | 4 | 17 | 8 | 31 |
| GR | 27 | 85 | 51 | 70 | 36 | 81 | 48 | 72 |
| GR | 24 | 76 | 39 | 69 | 56 | 70 | 80 | 90 |
| GR | 18 | 52 | 16 | 28 | 14 | 19 | 15 | 44 |
| GR | 40 | 100 | 99 | 99 | 26 | 67 | 65 | 78 |
| GR | 0 | 0 | 19 | 50 | 23 | 49 | 20 | 56 |
| WR | 0 | 0 | 10 | 17 | 10 | 26 | 13 | 29 |
| WR | 0 | 0 | 7 | 12 | 3 | 8 | 3 | 12 |
| WR | 5 | 18 | 29 | 56 | 14 | 29 | 23 | 56 |
| WR | 6 | 29 | 1 | 2 | 3 | 5 | 6 | 13 |
| WR | 1 | 5 | 0 | 0 | 5 | 10 | 15 | 35 |
| WR | 3 | 32 | 11 | 32 | 7 | 12 | 44 | 65 |
| WR | 1 | 8 | 26 | 50 | 11 | 50 | 13 | 42 |
| WR | 4 | 36 | 28 | 63 | 8 | 26 | 22 | 61 |
| WR | 0 | 0 | 10 | 16 | 5 | 9 | 15 | 35 |
| WR | 1 | 6 | 7 | 11 | 9 | 26 | 3 | 12 |
| WR | 3 | 31 | 1 | 3 | 13 | 30 | 23 | 56 |
| WR | 5 | 19 | 0 | 0 | 3 | 8 | 6 | 13 |
| WR | 6 | 29 | 11 | 31 | 4 | 6 | 44 | 65 |
| WR | 0 | 0 | 28 | 62 | 8 | 12 | 13 | 29 |
| WR | 4 | 35 | 29 | 56 | 8 | 25 | 22 | 61 |

| Session 3 (AVG) | | | | | | | | |
|--------|------|-------|-------|-------|------|-------|-------|-------|
| | Base | | R1 | | R2 | | R3 | |
| | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| AVG GR | 17 | 49.2 | 44.13 | 63.66 | 27.2 | 53.26 | 39.13 | 63.86 |
| AVG WR | 2.6 | 16.53 | 13.2 | 27.4 | 7.4 | 18.8 | 17.66 | 38.93 |

The good reader's results show that the score is HF for all of the three parts in this session. The first reading accumulated coherence score was 44.13, the second reading accumulated

coherence score was 27.2 and the third reading accumulated coherence score was 39.13 The coherence ratio scores were 63.66, 53.26 and 63.86 for all of the three parts of this session.

The weak reader's results show that the score is LF and VLF for all of the three parts in this session. The first reading accumulated coherence score was 13.2, the second reading accumulated coherence score was 7.4 and the third reading accumulated coherence score was 17.66. The coherence ratio scores were 27.4, 18.8 and 38.93 for all of the three parts of this session.

The difference between good and weak readers in the theme session is shown in Figure 12 and Figure 13. The good reader students have high HRV score and the bad reader students have low HRV score. The good readers are denoted in blue colour and the weak readers are denoted in red colour.
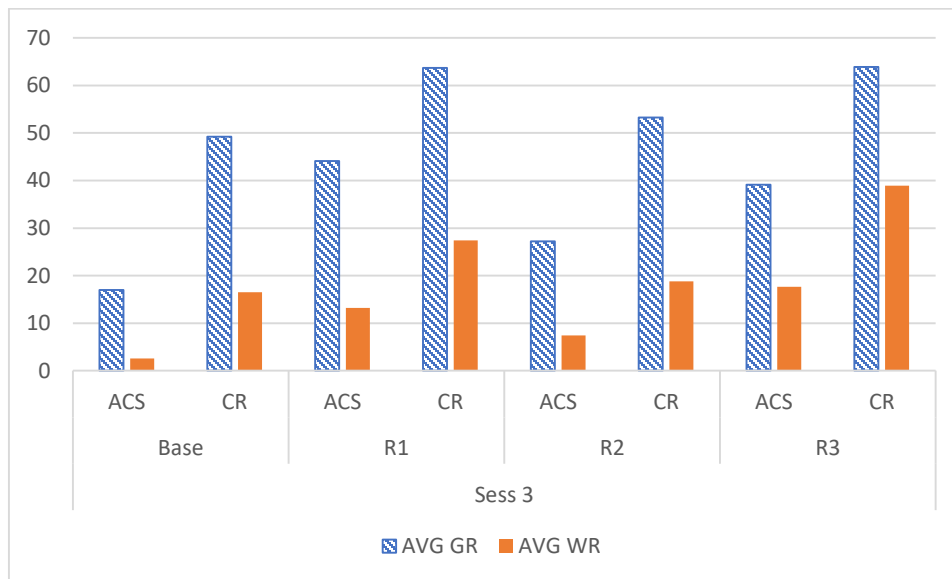


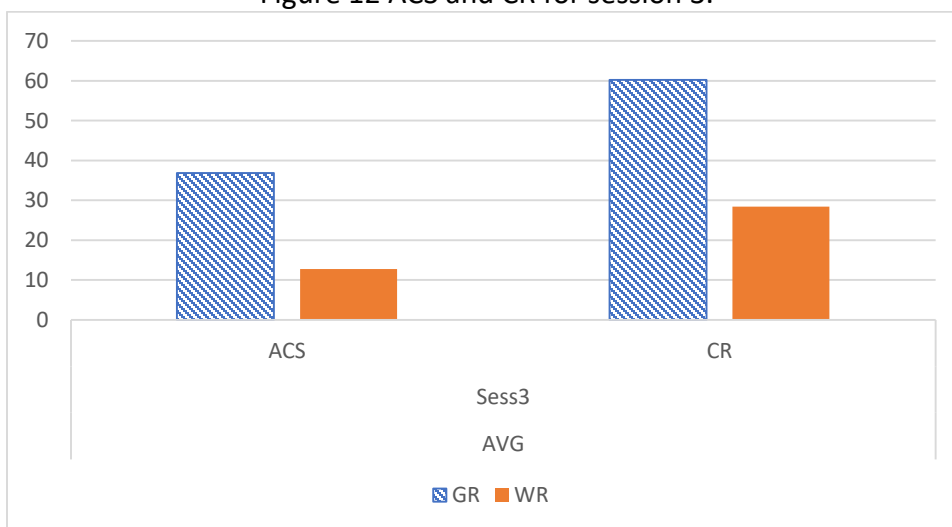Figure 12 ACS and CR for session 3.



Figure 13 Difference between good and weak reader students

**Understanding and HRV**

This session is about understanding and is divided into three parts. In the first part, the reader recites some verses without understanding the meaning. In the second part, the reader recites the same verses after reading the Tafseer. The reader recites from Al-Kahf Surah. In the third part

in this session, the student reads the text from a newspaper. The HRV data for this session are shown in Table 4.

Table 4 HRV data for the fourth session (understanding).

| | Session 4 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base | | R1 | | R2 | | R3 | |
| GR/WR | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| GR | 17 | 85 | 52 | 85 | 52 | 71 | 10 | 33 |
| GR | 40 | 100 | 76 | 85 | 112 | 97 | 70 | 84 |
| GR | 5 | 25 | 65 | 83 | 25 | 62 | 17 | 40 |
| GR | 16 | 50 | 98 | 97 | 55 | 79 | 21 | 36 |
| GR | 1 | 6 | 105 | 94 | 45 | 69 | 62 | 70 |
| GR | 45 | 100 | 110 | 97 | 115 | 100 | 18 | 59 |
| GR | 1 | 6 | 100 | 95 | 40 | 74 | 11 | 53 |
| GR | 2 | 13 | 55 | 68 | 95 | 93 | 18 | 79 |
| GR | 3 | 15 | 27 | 64 | 41 | 69 | 27 | 61 |
| GR | 6 | 43 | 17 | 47 | 12 | 54 | 58 | 72 |
| GR | 41 | 99 | 110 | 97 | 116 | 99 | 71 | 84 |
| GR | 46 | 101 | 76 | 85 | 112 | 97 | 18 | 60 |
| GR | 2 | 7 | 100 | 95 | 40 | 74 | 11 | 53 |
| GR | 2 | 7 | 105 | 94 | 45 | 69 | 63 | 70 |
| GR | 2 | 13 | 55 | 68 | 95 | 93 | 18 | 79 |
| WR | 5 | 16 | 24 | 50 | 5 | 14 | 8 | 25 |
| WR | 2 | 19 | 9 | 16 | 5 | 22 | 3 | 11 |
| WR | 0 | 0 | 15 | 29 | 10 | 40 | 3 | 9 |
| WR | 5 | 24 | 6 | 12 | 0 | 0 | 4 | 11 |
| WR | 1 | 9 | 14 | 36 | 20 | 62 | 10 | 39 |
| WR | 0 | 0 | 70 | 91 | 85 | 85 | 69 | 90 |
| WR | | | | | | | | |
| WR | 2 | 15 | 9 | 33 | 8 | 41 | 13 | 31 |
| WR | 5 | 16 | 14 | 36 | 5 | 14 | 69 | 90 |
| WR | 0 | 0 | 24 | 50 | 20 | 62 | 8 | 25 |
| WR | 5 | 24 | 9 | 16 | 5 | 22 | 3 | 11 |
| WR | 1 | 9 | 15 | 29 | 10 | 40 | 3 | 9 |
| WR | 0 | 0 | 6 | 12 | 0 | 0 | 4 | 11 |
| WR | 2 | 15 | 70 | 91 | 85 | 85 | 10 | 39 |
| WR | 2 | 19 | 9 | 33 | 8 | 41 | 13 | 31 |

| Session 4 (AVG) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base | | R1 | | R2 | | R3 | |
| | ACS | CR | ACS | CR | ACS | CR | ACS | CR |
| AVG GR | 15.26 | 44.66 | 76.73 | 83.6 | 66.66 | 80 | 32.86 | 62.2 |
| AVG WR | 2.14 | 11.85 | 21 | 38.14 | 19 | 37.71 | 15.71 | 30.85 |

The good reader's results show that the score is HF for the first two parts of this session. The first reading accumulated coherence score was 76.73, the second reading accumulated coherence score was 66.66 and the third reading accumulated coherence score for the newspaper text was 32.86. The coherence ratio scores were 83.6 and 80 for the first two parts and 62.2 for the newspaper text part.

The weak reader's results show that the score is LF and VLF for all of the three parts in this session. The first reading accumulated coherence score was 21, the second reading accumulated coherence score was 19 and the third reading accumulated coherence score for the newspaper text was 15.72. The coherence ratio scores were 38.14 and 37.17 for the first two parts and 30.85 for the newspaper text part.

The difference between good and weak readers in this session is show in Figure 14 and Figure 15. The good reader students have high HRV score and the weak reader students have low HRV score. The good readers are denoted in blue colour and the weak readers are denoted in red colour.
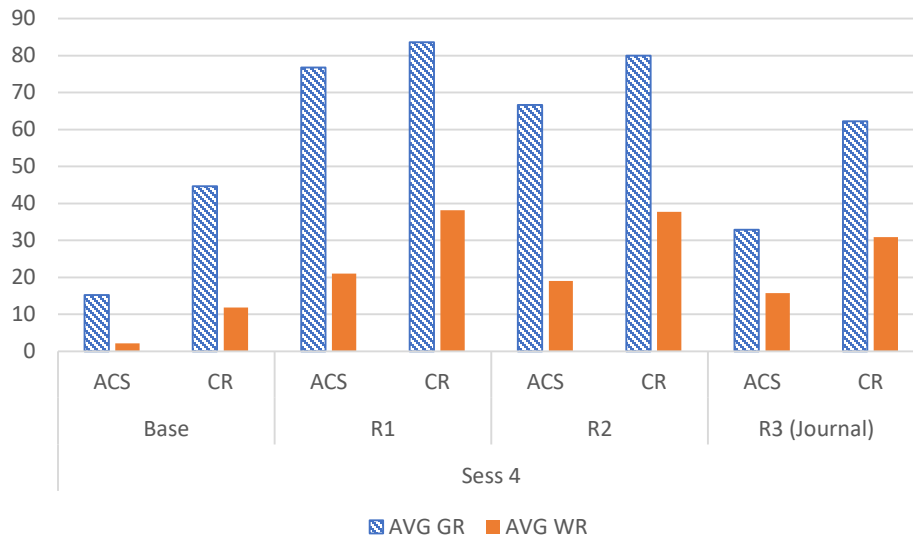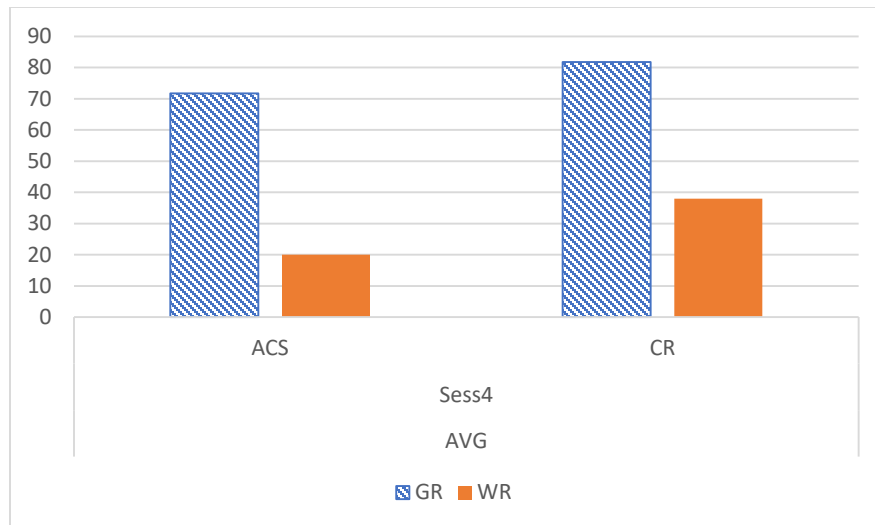


Figure 14 ACS and CR for session 4.

Figure 15 Difference between good and weak reader students

The recitation of the Holy Quran is governed by a variety of rules called the 'Tajweed Rules', which prescribe the correct pronunciation of the Holy Quran. Reciting the Holy Quran in the appropriate manner is important to all Muslims and is indispensable in Islamic worship, such as in prayer.

Many factors that are internal and external to the human body affect HRV (Al-Zaben, Hamad, Alfahoum, & Saefan, 2014). Emotions are an irrepressible and uncontrollable aspect of the human mental state. In fact, some bad situations induce stress and lead to different hardships. Although one cannot always avoid such situations, he or she can be aware of when the body feels stress or any other strong emotion (Sharma & Kapoor, 2014).

(Abdullah & Omar, 2011) reported that Quran recitation produces a significant calming effect that releases hormones and chemicals responsible for relaxation (Shekha, Hassan, & Othman, 2013).

This research agreed with other researches which studed the effect of listening Quran recitation on the mental health of the Iranian medical staff this research revealed the positive effect of hearing Quran on the mental health of medical staff of Mazandaran University of medical sciences in Iran. This study illustrate that in Muslim communities hearing the Quran recitations improves the mental state of the people. (Darabinia et al., 2017). Another research studies the effect of listening Quran on the mental health of personnel in Zahedan University of Medical Sciences of Iran. The results show that listening to Quran could be recommended by psychologists for improving mental health and achieving greater calm. (Mahjoob, Nejati, Hosseini, & Bakhshani, 2016)

Other researchers conducted on patients found that listening to Quran does not affect the patient's condition. (Abu Bakar, 2014)  studies the effect of listening the Quran (Al Fatehah and Yassin) on the physiological stress response of ICU Muslim ventilated patients on physiological stress response among Muslim ventilated patients. The result illustrate that listening to Quran not significantly affects the physiological stress.

(Ariff et al., 2013) was conducted to estimate the effects of listening to *Yasiin surah* recitation on the haemodynamics of critically ill patients, this study was done on patients who were on

conventional hospital treatment. The results did not prove the effect of listening to *Yasiin* surah recitation on ventilated patients.

The importance of this research is that the students have recite the Quran themselves and the results show that reciting Quran affect the heart rate variability which increased relaxation

## Conclusions

This research studies the relationship between HRV with different Quran recitation types with different reading styles. All students who joined to this session are undergraduate students. Based on the results, the students who are good in Quran recitation they have higher scores in heart rate variability and had higher mean scores in coherence ratio and accumulate coherence score which indicate that the result of the good reciter showed the good effect of reciting Quran on HRV. The students who are weak in Quran recitation they have lower scores in heart rate variability and had lower mean scores in coherence ratio and accumulate coherence score which indicate that the result of the weak reciter showed they don't have good effect of reciting Quran on HRV.

The results show a clear difference in HRV data between good readers and weak readers, good readers have control of their heart actions and reactions. Thus, the good reciter students have high score in HRV and better control of their heart function. For the good reciter the results of the first session and last session shows that those two sessions have the highest score in HRV comparing the second and third sessions. Meanwhile, the scores in the second and third sessions are lower than that in the first and fourth sessions. In general, the main conclusion of the results of this study has been confirmed that the students who have a good ability to recite Quran properly they can control their psychological signals easier than students who weak in reciting Quran and this tends to increase relaxation.

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