PSYCHOLOGICAL EFFECTS OF THE RECITATION OF THE QURAN AMONG UNIVERSITY STUDENTS THROUGH THE INVESTIGATION OF HEART RATE VARIABILITY AND BREATHING BEHAVIOUR

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SUPERVISOR’S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Doctor of Philosophy.

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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EMAN GHANIM NAYEF

Thesis submitted in fulfillment of the requirements for the award of the degree of Doctor of Philosophy

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“All praises and thanks to ALLAH”

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ABSTRAK

Al-Quran adalah firman Allah yang diturunkan kepada Nabi Muhammad dan pembacaan Al-Quran adalah sangat terkenal di kalangan masyarakat Islam dalam ibadat dan doa mereka. Salah satu kesan penting dari Quran kepada pembelajaran pelajar pencapaian mereka tercermin dalam emosi. Emosi mengawal tumpuan pelajar, dan mempengaruhi pembelajaran kendiri mereka. Tambah pula, emosi adalah sebahagian daripada identiti pelajar, dan ia mempengaruhi perkembangan personaliti, kesihatan psikologi dan kesihatan fizikal. Kajian ini melibatkan menganalisa kesan psikologi semasa membaca Al-Quran untuk pelajar-pelajar sarjana muda. Objektif kajian ini adalah untuk mengkaji kesan bacaan Al-Quran pada variasi kadar denyutan jantung (HRV) dan Tingkah laku pernafasan (BB) di kalangan pelajar universiti, dan juga hubungan antara HRV / BB dengan pelbagai jenis bacaan Al-Quran, juga untuk mengetahui hubungan ayat-ayat yang berlainan dan gaya pembacaan Quran di kalangan pelajar. Reka bentuk kajian kuasi eksperimen kuasi berulang telah dijalankan dalam kajian ini. Bagi ujian HRV, tiga puluh pelajar siswazah serjana muda yang mengambil bahagian dalam ujian ini dibahagikan kepada dua kumpulan; kumpulan pembaca al-Quran yang baik dan kumpulan pembaca al-Quran yang lemah. Parameter kebolehubahan kadar denyutan jantung (HRV) dan untuk ujian pernafasan, kesemua enam pelajar sarjana muda semua adalah baik yang terlibat dalam ujian ini, parameter kitaran pernafasan BB (B/min) diukur untuk memeriksa. Ujian pra-pos menunjukkan perbezaan yang signifikan dalam HRV, apabila nilai-p <0.05 untuk kedua-dua kumpulan. Dan keputusan antara kumpulan pembaca yang baik dan kumpulan pembaca yang lemah juga menunjukkan perbezaan yang jelas dalam data HRV apabila semua nilai-p <0.05. Pembaca yang baik mengawal. Hasil penguji pernafasan berdasarkan ujian Pra-Post menggambarkan bahawa nilai p <0.05 menunjukkan perbezaan yang ketara antara. Berdasarkan penemuan dari penyelidikan ini, pelajar yang baik dalam membaca Al-Quran, mereka mempunyai skor yang lebih tinggi dalam variasi kadar denyutan jantung dan skor HRV. Juga, membaca Al-Quran dengan peraturan Tajweed khususnya Maad dengan pernafasan yang panjang, dan Waqf dengan berhenti bernafas, yang menunjukkan keadaan yang. Berdasarkan hasil HRV dan BB melalui bacaan Al-Quran dari pelajar, hasil menunjukkan skor HRV yang tinggi, dan kitaran pernafasan. Kajian ini menyimpulkan bahawa membaca Al-Quran dengan Tajweed mempunyai nilai yang lebih tinggi dalam HRV dan Tingkah laku pernafasan (BB) (peningkatan ketenangan).
ABSTRACT

The Quran is the word of Allah revealed to the Prophet Muhammad and Quran recitation is a highly recognised among the Muslim community in their worships and prayer. One of the important effects of the Quran on undergraduate student learning and their 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. This study involves analysing the psychological effects during reciting Quran for the undergraduate students. The objectives of this research are to examine the effects of Quran recitation on the Heart Rate Variability (HRV) and Breathing Behaviour (BB) among undergraduate university students, furthermore, the relationship between HRV/BB with different types of Quran recitation, also to discover the relationship of different verses and reading styles of reciting Quran with relaxation among students. Repeated measures quasi experimental design was conducted in this study. For HRV test, thirty undergraduate students whom participated in this test were divided into two groups; good Quran reciters group and weak Quran reciters group. The parameters of heart rate variability (HRV) are coherence ratio and accumulate coherence score, were measured to examine the outcome. And for breathing behaviour test, six undergraduate students all are good Quran reciters whom involved in this test, the parameter of BB breathing cycle (B/min) were measured to examine the outcome. Pre–post test score mean differences comparison showed significant differences in HRV, when all p-values < 0.05 for both group. And the results between good reciters group and weak reciters group also shows a clear significant difference in HRV data when all p-values < 0.05. Good reciters have effects on better HRV performance as compared to weak reciters. The Breathing Behaviour testing outcome based on Pre-Post-test illustrate that the p value <0.05 which show significant differences between the baseline and reciting Quran. According to the finding of this research, students who are good in reciting Quran, they have higher scores in heart rate variability depending on their higher scores in coherence ratio and accumulate coherence score of HRV. Also, reciting Quran with Tajweed rules specially Maad with long breathing, and Waqf with stop breathing, tends to more control on deep and slow breathing which reflect on relaxation conditions. Based on the result of the HRV and Breathing Behaviour through reciting Quran for students, results indicate high scores of HRV, and breathing cycle per minute indicate a low B/min, which means that the heart and breath work efficiently together, the parasympathetic branch of the ANS is activated, creating the relaxation response. This research concluded that the students who are good in reciting Quran, they have higher scores in heart rate variability and the breathing cycle become slower during reciting Quran, which mean the breath become a peace breath, that makes the students calm and relax.
# TABLE OF CONTENT

**DECLARATION**

**TITLE**

ACKNOWLEDGEMENTS ii

ABSTRAK iii

ABSTRACT iv

TABLE OF CONTENT v

LIST OF TABLES x

LIST OF FIGURES xi

LIST OF SYMBOLS xiii

LIST OF ABBREVIATIONS xiv

**CHAPTER 1 INTRODUCTION** 1

1.1 Research Background 1

1.2 Problem Statements 5

1.3 Objectives of the Research 8

1.4 Research Questions 8

1.5 Research Hypothesis 8

1.6 Research Scope and Limitation 9

1.7 Operational Terms 9

1.8 Thesis Organization 12

**CHAPTER 2 LITERATURE REVIEW** 13
CHAPTER 4 RESULTS

4.1 Introduction

4.2 Result from Survey Information
   4.2.1 Result from Demographic Information
   4.2.2 Result from DASS

4.3 Results of the Objectives of the Study
   4.3.1 Objective 1: To Examine The Effects of Quran Recitation on The HRV Among University Students (Good and Weak Reciters).
   4.3.2 Objective 2: To Examine the Effects of Quran Recitation on The Breathing Behaviour (BB) Among University Students (Good and weak Reciters).
   4.3.3 Objective 3: To Analyse The Relationship Between HRV/BB With Quran Recitation.
   4.3.4 Objective 4: To Discover The Relationship of Different Verses and Reading Styles (Tajweed, Story, Theme, and Understanding) of Quran Recitation With Relaxation Among Students.
CHAPTER 5 DISCUSSION, CONCLUSION AND FUTURE WORK

5.1 Introduction

5.2 Discussions on Objectives of the Study

5.2.1 Objective 1: To Examine The Effects of Quran Recitation on The HRV Among University Students (Good and Weak Reciters).

5.2.2 Objective 2: To Examine The Effects of Quran Recitation on The Breathing Behaviour (BB) Among University Students (Good and Weak Reciters).

5.2.3 Objective 3: To Analyse The Relationship Between HRV/BB With Quran Recitation.

5.2.4 Objective 4: To Discover The Relationship of Different Verses and Reading Styles (Tajweed, Story, Theme, and Understanding) of Quran Recitation With Relaxation Among Students.

5.3 Discussion on Hypothesis of the Study;

5.4 Final Conclusion

5.5 Suggestions for Future Work

5.6 Summary

REFERENCES

LIST OF PUBLISHED PAPERS

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E
<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>164</td>
</tr>
<tr>
<td>G</td>
<td>165</td>
</tr>
<tr>
<td>H</td>
<td>167</td>
</tr>
<tr>
<td>I</td>
<td>174</td>
</tr>
<tr>
<td>J</td>
<td>179</td>
</tr>
<tr>
<td>K</td>
<td>183</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 3.1 Regulations followed in selecting good and weak Quran readers 71
Table 3.2 The participants’ information 79
Table 3.3 Depression Anxiety and Stress Scales. 80
Table 3.4 Results of session 1 (Tajweed). 85
Table 3.5 Results of session 2 (Surah). 87
Table 3.6 Results of session 3 (Theme). 89
Table 3.7 Results of session 4. 90
Table 3.8 Results of breathing behaviour 91
Table 4.1 Who and place the reciter learns Quran 93
Table 4.2 The result for the good (GR) and the weak (WR) Quran reciters with HRV scores. 95
Table 4.3 DASS results. 96
Table 4.4 The HRV data for the first session (Tajweed). 99
Table 4.5 HRV data for the second session (story). 101
Table 4.6 HRV data for the third session (theme) 103
Table 4.7 The HRV data for the fourth session (understanding). 105
Table 4.8 Result for effects of Tajweed on BB 109
Table 4.9 Relationship between CR and B/min 111
Table 4.10 The results of HRV and BB. 111
Table 4.11 The HRV data for all four sessions of reciting Quran. 116
Table 4.12 Data for reciting Quran and reading newspaper 117
Table 4.13 The mean score of HRV for good and weak reciters Pre-Post test 117
Table 4.14 The mean score of HRV based on good and weak reciters 118
Table 4.15 The mean score of BB for good reciters Pre-Post test 118
LIST OF FIGURES

Figure 2.1  Relationship between Quran recitation and HRV. 25
Figure 2.2  Heart Rate Variability. 30
Figure 2.3  A high HRV indicates high resilience and low stress. 30
Figure 2.4  Autonomic nervous system. 32
Figure 2.5  Power spectrum of the HRV waveform. 34
Figure 2.6  Change of heart rate with respiration. 35
Figure 2.7  Capnogram phases. 37
Figure 2.8  Capnography and Capnometry. 39
Figure 2.9  Effect reduction of O2 availability by 40% (red = mostly O2, dark blue = least O2). 40
Figure 2.10  Relationship between reciting Quran and HRV, BB 42
Figure 2.11  The Conceptual Framework 44
Figure 3.1  HRV Research Design 48
Figure 3.2  BB Research Design 49
Figure 3.3  HRV Data Collection. 52
Figure 3.4  HRV protocol for session 1 (Tjweed). 55
Figure 3.5  HRV protocol for session 2 (Story). 60
Figure 3.6  HRV protocol for session 3 (Theme). 62
Figure 3.7  HRV protocol for session 4 (understanding). 64
Figure 3.8  Breathing Behaviour Data Collection 66
Figure 3.9  HRV data analysis. 68
Figure 3.10  Breathing behaviour data analysis. 70
Figure 3.11  emWave PC tool 73
Figure 3.12  Ear sensor for emWave PC tool 74
Figure 3.13  PC screen of emWave 74
Figure 3.14  Image of the reciter During HRV. 75
Figure 3.15  The CapnoTrainer 76
Figure 3.16  PC screen of CapnoTrainer 77
Figure 3.17  Image of the reciter during BB. 78
Figure 3.18  Tajweed session coherence rate and average of heart rate results. 85
Figure 3.19  Tajweed session HRV power spectrum results. 86
Figure 3.20  Surah session coherence rate and average of heart rate results. 87
Figure 3.21  Surah session HRV power spectrum results. 88
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Difference between GR and WR in number</td>
<td>94</td>
</tr>
<tr>
<td>4.2</td>
<td>Difference between GR and WR in percentage</td>
<td>95</td>
</tr>
<tr>
<td>4.3</td>
<td>Students with high HRV scores</td>
<td>97</td>
</tr>
<tr>
<td>4.4</td>
<td>Student with low HRV scores</td>
<td>97</td>
</tr>
<tr>
<td>4.5</td>
<td>Students with high HRV scores.</td>
<td>98</td>
</tr>
<tr>
<td>4.6</td>
<td>Students with low HRV scores.</td>
<td>98</td>
</tr>
<tr>
<td>4.7</td>
<td>The ACS and CR results for session 1 (Tajweed)</td>
<td>100</td>
</tr>
<tr>
<td>4.8</td>
<td>Difference in HRV between total average of good and weak reciters.</td>
<td>100</td>
</tr>
<tr>
<td>4.9</td>
<td>The ACS and CR results for session 2 (story).</td>
<td>102</td>
</tr>
<tr>
<td>4.10</td>
<td>Difference between total average HRV scores of good and weak reciter students in session 2.</td>
<td>102</td>
</tr>
<tr>
<td>4.11</td>
<td>The ACS and CR results for session 3 (Theme).</td>
<td>104</td>
</tr>
<tr>
<td>4.12</td>
<td>Difference between total average HRV scores of good and weak reciter students in session 3.</td>
<td>104</td>
</tr>
<tr>
<td>4.13</td>
<td>The ACS and CR results for session 4 (Understanding).</td>
<td>106</td>
</tr>
<tr>
<td>4.14</td>
<td>Difference between HRV average scores for good and weak reciter students in session 4.</td>
<td>106</td>
</tr>
<tr>
<td>4.15</td>
<td>The CapnoTrainer screen record.</td>
<td>108</td>
</tr>
<tr>
<td>4.16</td>
<td>The difference between baseline, reading and the newspaper result.</td>
<td>109</td>
</tr>
<tr>
<td>4.17</td>
<td>The CR score of HRV.</td>
<td>112</td>
</tr>
<tr>
<td>4.18</td>
<td>Breathing behaviour results (B/min).</td>
<td>112</td>
</tr>
<tr>
<td>4.19</td>
<td>Effect of different verses and reading style on the emotions of the good and weak reciters</td>
<td>114</td>
</tr>
<tr>
<td>4.20</td>
<td>Effect of different verses and reading style on the emotions of the good and weak reciters</td>
<td>115</td>
</tr>
<tr>
<td>4.21</td>
<td>Difference between good and weak reciters</td>
<td>115</td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
<td></td>
</tr>
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<td>CO₂</td>
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<td>Oxygen</td>
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</tr>
</tbody>
</table>
LIST OF ABBREVIATIONS

ACS Accumulate Coherence Score
ANS Autonomic Nervous System
ATP Adenosine triphosphate
B/min Breathe per minute
BB Breathing Behaviour
BFB Biofeedback
BR Breathing Rate
BVP Blood Volume Plus
CPR Cardiopulmonary Resuscitation
CR Coherence Ratio
DASS Depression Anxiety Stress scale
EEG Electroencephalography
ETCO2 End Tidal Carbon dioxide
GR Good Reader
GSR Galvanic Skin Response
HF High Frequency
HR Heart Rate
HRV Heart Rate Variability
LF Low Frequency
N-N Normal to Normal interval
PaCO2 Partial pressure of CO2
PBUH Peace Be Upon Him
pH potential of hydrogen
PNS Parasympathetic Nervous System
R-R R wave to R wave
RSA Respiratory Sinus Arrhythmia
SDNN Standard Deviation of the Normal to Normal interval
SNS Sympathetic Nervous System
TF Total Frequency
UMP University Malaysia Pahang
VLF Very Low Frequency
WR Weak reader
REFERENCES


133


HeratMath. (2016). The science behind the emwave® and inner balance™ technologies. from HeartMath Institute.org


Rene, R. (2008). The efficacy of a portable HRV feedback device in conjunction with mental health treatment of clients with major depressive disorder enrolled in a county welfare-to-work program. (Ph.D.), Alliant International University, USA.


Tanis, C. (2008). *The effects of heart rhythm variability biofeedback with emotional regulation on the athletic performance of women collegiate volleyball players.* (PhD doctoral dissertation), Capella University, Minneapolis, MN.


