

A Study of the Effect of Dzikir on the Psychology of Students With Disciplinary Problems Using Heart Rate Variability (HRV)

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Abstract:-'*Dzikir*' recitation was combined with biofeedback for this experiment. Recitation of '*dzikir*' (Islamic recitation) is known to have positive impacts towards emotion. When properly recited, '*dzikir*' could bring calmness to the mind and emotions. An emotion at peace could then bring better results from any actions. Twenty secondary school students with disciplinary misbehavior were chosen to undergo a biofeedback procedure that incorporated '*dzikir*' recitation. '*Dzikir*' intervention enabled the students to make changes themselves using the technique of "Heart Rate Variability" (HRV). Students were given technical chanting slowly and loudly of the 'la ilaha illa Allah' '*dzikir*'. The study found that students who successfully completed the '*dzikir*' training were able to make changes within themselves. The students had successfully achieved the change score "HRV Coherence" of the VLF spectrum of LF and HF spectrum conditions. The study had found that this technique was very effective and suitable to be implemented to assist students in making behavioral changes. This technique can be used in schools to improve the effectiveness of the disciplinary problems prevention programs and thus enabling education programs to be implemented successfully.

Keywords: '*dzikir*', biofeedback, heart rate variability

INTRODUCTION

Disciplinary problems among secondary school students in Malaysia are reported to be getting more serious. Until now, various techniques and approaches have been implemented in order to decrease and deal with all manner of disciplinary problems in schools. Generally, the approach being normally taken is guidance and counseling by the teachers.[1] However, in dealing with more serious disciplinary cases, court ruling is involved and the problematic students would be placed at correctional institutions. At these institutions, the students would undergo rehabilitation programs which are focused towards planned behavioral changes with the implementation of a module being developed within a period of 6 months to a year.[2]

Biofeedback has been recognized as the latest technique to help individuals in self control (mind & emotions). Through this technique, the individual's performance in self control would be quantified and displayed on the computer monitor. This physiological information is a product of psychological reactions, in which any psychological changes would affect the physiology. This combined information is crucial in learning intervention training program. The objective of the training is rehabilitation; therapies involved are to alter the psychological components that are difficult to be seen and quantified. [2] The emotional status has direct and significant effects on behaviors. Individuals who could control their emotions effectively could then better control whatever activities they are involved in. Those who failed to control their emotions would normally get themselves involved in behavioral problems.[3]

Dzikir

The recitation of *dzikir* was incorporated in the experiment. Recitation of *dzikir* (Islamic recitation) is known to have positive impacts towards emotion. The word "*dzikir*" is derived from the Arabic word "*dzakara*" which means remembering.[3] As a terminology, it means practice speech through recitations and remembrance of Allah, The Creator. *Dikir* is the best traditions of worship and most pleasing to Allah, the lightest and most easily done by not having certain conditions and rules. It can

be done at any time, any place and at any state.[4] *Dikr* has psychological and spiritual benefits. Psychologically, it gives a sense of spiritual comfort and it gives a sense of being closer to God [5]

For this research, the *zikr* methods used were *jahri* and *sirri*. *Jahri* means reciting verbally or aloud by tongue. *Sirri* or *khofi* means reciting in an undertone manner or in heart. *Dzikr jahri* was commonly practiced during the time of Prophet Muhammad (s.a.w), especially after prayers[6] Prophet Muhammad (s.a.w) also mentioned that *dzikr sirri/khofi* is considered as the best of *dzikr* but *dzikr jahri* is also allowed.[6] Based on this, despite the difference in *dzikr* recitations, both have their own effects on human's physiology as being explained in the next paragraph. The effect of *dzikr* recitation was already being proven in a previous experiment. [11]

Dzikr, when properly recited could bring calmness to the mind and emotions. An emotion at peace could then bring better results from any actions. The words recited during *dzikr* recitation acts as the focal point in treating a person from within. When combined with psychological relaxation within a person, it would positively influence the autonomic nervous system (a control system in the body that acts largely unconsciously) in regulating the heart rate, respiratory rate and the metabolic rate [7], by lowering the physiological processes.

This experiment was focused on a group of secondary school students who were known to have disciplinary problems. These students were chosen because they could be categorized as those failing to properly control their emotions. What needed was a mean to calm their emotion and thus better control their own behaviors. *Dzikr* recitation was perceived as the most probable solution to this situation.

Individuals who are able to control emotions would be able to control their behavior better and on beneficial ways.[3] On the other hand, individuals who are unable to control their emotions would face difficulties to perform activities accordingly. They would be easily worried, restless and angry while engaged in any activities. [3] This was expected to be proven by this biofeedback experiment. The recitation of *dzikr* would give certain effects on the emotions of these students.

HRV biofeedback is known to be directly influenced by emotional states. There are three related types of spectrum for this biofeedback: VLF or very low frequency, which is lower than 0.03 Hz; LF or low frequency, which is within the range of 0.03 to 0.15 Hz; and HF or high frequency, which is within the range of 0.18 to 0.4 Hz.[8] Anxiety, for example, is an emotional disturbance. Studies have shown that it has certain effects on HRV and HRV biofeedback training could help solving this problem.[12]

The effectiveness of *dzikr* in improving students through the similar biofeedback exercises was already proven by an experiment done before.[11] The experiment concluded that *dzikr* could significantly decrease the level of anxiety and stress which has remarkable effect on HRV. The changes of mind-body condition were also perceptible during the study.[11]

A high reading of HRV (LF and HF) indicates creativity, psychological flexibility and capacity to adopt faster response in cognitive, affective and physiological emphasis. A low reading of HRV (VLF) shows anxiety, depression and different cardio-vascular. Health factors can also cause an increase in certain heart rhythms; including emotional, anxious thinking, breathing, pressure in the arteries and other behavioral and physiological changes.[3]

The effectiveness of the *dzikr* procedure depends on the student's faith in Allah, The Creator. It could be said as being the matter of the heart, it is closely related to one's emotions. When recited in an undertone manner, or *sirri*, it would be closer to one's heart and it would be more effective to achieve calmness compared to reciting it by *jahri*.

METHOD

The objective of this experiment was to analyze the effects of *dzikr* recitation on the biofeedback responses of a group of students. The main biofeedback equipment being used in the experiment was emWave desktop Software Kit devices, to detect their emotion through their heart rate rhythm. The same equipment was also being used in a previous experiment [3].

Before the experiment started, these following items must be made available:

1. Student's demographic form (family background information)
2. Guardian's and student's consent form (permission from parents and student)
3. Student's objective form (student's aspirations)
4. Nijmegen Questionnaire (student's physical health conditions)
5. Student's academic record (student's academic performance)
6. Student's disciplinary record (disciplinary offences)

Before the experiment commenced, the information and data about the students must be obtained. The physiological status of the students must be good, so that it would not influence the results. At this stage also, all the relevant forms must be completed. While doing that, the researcher must try to create a friendly environment with the students and tried to make the students felt comfortable.

The next stage was to get the basic HRV readings of the students. These readings would act as a baseline for next experiments. Three minutes was allocated to take the HRV readings of each student. The HRV sensor was attached to the student's ear. After briefly explaining the device to the student, the 'start' button was pressed and the student's HRV reading was taken for three minutes. These readings would act as baseline or reference for the next procedures. After the end of this first session (baseline reading 1), the students should know their actual heart performance at this state based

on the readings of the coherent ratios (red, blue and green bars)

The next stage of the experiment was *dzikr* recitation by *jahri* or aloud. The students were requested to recite the *dzikr La ilaha illa Allah* aloud. Students were reminded to remember Allah in heart while reciting. They were required to inhale slowly through their nose and while exhaling through their mouth, they recited *la ilaha illa Allah*. This exercise would proceed for three minutes. The students' HRV readings were taken throughout the exercise.

The final stage of the experiment was reciting *dzikr* in an undertone manner or *sirri*. Each student was requested to recite the *dzikr* in three minutes and their HRV readings were taken throughout the time. They were required to inhale slowly through their nose and while exhaling through their mouth, they recited *ilaha illa Allah* in their hearts.

RESULT

The aim was to assess the coherent physiological state, failing which students could change and the emotional coherence reading would increase. Coherence after *dzikr* was higher than normal (baseline). According to the average coherence rate, students in the experiment group, the coherence of HRV biofeedback from baseline to *dzikr* recitation effect was so effective because in most of the cases, the coherence increased.

Referring to Table 2, it could be observed that the value of the VLF was decreasing from pre-*dzikr*, at 68.5 to post-*zikr* (*sirri*) at 57.5. For the LF spectrum, the value decreased after *jahri* recitation of *dzikr*, from 20 to 18.2, but it reached the highest value after *sirri* recitation at 22.4. However, for the HF spectrum, it showed consistent increase form pre-*dzikr* to post-*dzikr* (*sirri*), 14.3 to 16.6 and finally 20.4.

Measures	Mean values			Standard deviation		
	VLF	LF	HF	VLF	LF	HF
HRV						
Pre	68.5	20	14.3	20.4	16.8	15.3
Post 1 (<i>jahri</i>)	64.7	18.2	16.6	24.4	12.3	22
Post 2 (<i>sirri</i>)	57.4	22.4	20.4	21.6	12.3	20

Table 2: Mean Values, Standard Deviation of Average Coherence Rate: At Pre and Post

The ANOVA statistical test was done to determine the significant difference against the data. The result was shown in **Table 3** below:

Groups	Count	Sum	Average	Variance
VLF	20	1370	68.5	414.3684
LF (<i>pre-dziker</i>)	20	400	20	283.0526
HF	20	286	14.3	233.2737
VLF	20	1294	64.7	597.5895
LF (<i>post-jahri</i>)	20	364	18.2	151.7474
HF	20	332	16.6	483.8316
VLF	20	1147	57.35	467.2921
LF (<i>post-sirri</i>)	20	447	22.35	151.0816
HF	20	408	20.4	417.3053

ANOVA	SS	df	MS	F	P-value	F crit
Source of Variation						
Between Groups	82673.9	8	10334.24	29.0692	2.87E-28	1.9929
Within Groups	60791.3	171	355.5047			
Total	143465.2	179				

Table 3: ANOVA Test for Significant Difference

If $F > F_{crit}$, the populations are not equal. In this ANOVA test, as shown in **Table 3**, F value was 29.0692 and the value of F crit, was 1.9929. Therefore there was significant difference between the values. The values of VLF, LF and HF before *dziker* recitation and after were all significantly different. There was sufficient evidence to conclude that there was a difference between the value of VLF pre-*dziker* and the values of all spectrums post-*dziker*. The ANOVA statistical test done showed that there was significant difference between the values concerned, i.e the values at baseline and the values after *dziker* recitation, *jahri* and *sirri*.

DISCUSSION

The observations showed that there were changes in HRV readings in response to the changes in the students' psychophysiology. HRV detected signals after undergoing training on emotional remembrance. When the students started to change to a more emotional calmness, the HF (high frequency) also increased. During this, the student's heart rate was lowered and the beat to beat interval was increased [9]. When the coherent sample was in a state of calm, pulse wave was very smooth then HF would increase. Otherwise, when the individuals were in a state of emotional change, the pulse wave- variable and VLF and LF would increase. The student's heart rate increased and thus lowering the beat to beat interval.[9]

The *jahri* & *sirri* recitation of *dziker* had their effect on the VLF spectrum. The value after *dziker* by *jahri* was lower than the baseline value but the lowest value was after recitation of *dziker* by *sirri*. It showed that the *dziker* recitations had the effect in calming the student's hearts. For the LF spectrum, the value decreased a bit after *jahri dziker* recitation if compared with the baseline value. At this stage, the subjects were in the state of emotional change. There was a disruption in the LF spectrum readings.

[9] According to a study performed by Prima et. al, students achieved high anxiety level in pre test or baseline.[12] This explains the disruption in the LF spectrum readings. However, in this experiment, the value increased back to reach its maximum value after the *sirri* recitation of *dzikr*. The student's emotion became more stable and calm after the *sirri* recitation of *dzikr*.

The HF spectrum showed a different pattern. The value increased after the *jahri* recitation of *dzikr* if compared with the baseline value. It reached its highest value after *sirri* recitation. The value increased consistently. The *sirri dzikr* recitation calmed the student's emotion and thus achieved the desired coherent score. The *dzikr* recitation had calming effects on the students' emotions. As mentioned before in the '*Dzikr*' section of this paper, it was proven by a previous experiment.[11]

The values obtained from this experiment were being tested for significant difference. The result of this test was shown in Table 3. There was significant difference between the values; pre and post *dzikr* recitation. It showed that *dzikr* recitation had affected the HRV biofeedback readings. Similar results were being recorded in previous experiment involving *dzikr* recitation and biofeedback.[11]

This difference showed that there was always a gap between a calm emotional state and a disturbed one. The difference after the recitation of *dzikr* showed how effective *dzikr* recitation was towards calming and stabilizing the emotions. Thus, it further proved the effectiveness of *dzikr* in treating psychological disturbances.

The recitation of *dzikr* is a religious practice. Through religious practice and religious experience; individuals are able to create positive emotions that have association with mental health. Positive emotions that come from religious practice and experience may buffer the daily hassles and stress. Through rituals and rites of passage, religion can increase the positive psychological outcomes by providing community support during major life changes like marriage and death. The religious community promotes altruism, generosity, and forgiveness attitude that enhance the meanings of an individual life. Through these religious practices and beliefs, communities are strengthened and expanded, providing individuals the access to greater social support while also strengthening familial bonds. Finally, religion creates a framework through which social mores can be understood and followed. In this way, the avoidance of certain behaviors (e.g., criminal behavior, substance abuse) that can lead to negative mental and physical health consequences is encouraged and strengthened in the religious community.[10]

CONCLUSION

Based on the results, *sirri* recitation of *dzikr* is more effective in inducing calmness, compared to *jahri* recitation. The inclusion of *dzikr* recitation in the biofeedback procedure has produced positive results. Therefore, *dzikr* recitation is an essential element in this procedure. It could be concluded also that a combination of nijmigen questionnaires, modules biofeedback chanting and breathing exercises could be used to help students at risk to make behavioral changes. This procedure could be implemented in schools as a strengthening program to improve students' performance and behavior. Although this method requires the usage biofeedback devices, which are expensive, it should not be a barrier for schools and the Ministry of Education to provide the relevant equipment and training to the teachers involved in the program. Training programs and the implementation of this module would make the process of counseling and student performance improvement become more interesting and dynamic.

References:

- [1] Mohd Ismail Othman, "*Menangani disiplin di sekolah*", Utusan Publications, 2006
- [2] Muhammad Nubli Abdul Wahab, "Biofeedback Program Module (Intervention/Treatment Scripts Protocol)", teacher's module for the rehabilitation program of secondary school students with disciplinary problems,

- [3] Mohd Rozali Senik and Muhammad Nubli Abdul Wahab, "A pilot study of the effect of zikir on the performance psychology using heart rate variability (hrv)",
- [4] A.Y. Saleh . *Berzikir untuk kesihatan Syaraf*, Penerbit Zaman :Jakarta , 2010.
- [5] I. Khan. *Dimensi Spiritual Psikologi*, Pustaka Hidayah;Bandung,2000
- [6] Al-Bukhari, *Shahih al Bukhari* page: 109, Chapter I
- [7] Zaenal Abidin, "Zikir Suatu Tradisi Pesantren Menuju Terapeutik Depresif (*Kajian Menuju Terapi Psikosomatik dan Neurosis*)", *Ibda`*, Vol. 4 No. 1 Jan-Jun 2006 67-87
- [8] Mohd Rozali Senik, Muhammad Nubli Abdul Wahab and Mardiyah Zamani, "The Study Of heart rate variability (hrv) Biofeedback Through Zikir (Islamic Recitation) of High School Students",
- [9] Rollin McCraty, MA, Mike Atkinson, William A. Tiller, PhD, Glen Rein, PhD, and Alan D. Watkins, MBBS, "The Effects of Emotions on Short-Term Power Spectrum Analysis of Heart Rate Variability", *The American Journal Of Cardiology*, Vol. 76 November 15, 1995
- [10] Triantoro Safaria, Ahmad bin Othman and Muhammad Nubli Abdul Wahab, "Religious Coping, Job Insecurity and Job Stress among Javanese Academic Staff: A Moderated Regression Analysis", *International Journal of Psychological Studies*, Vol. 2, No. 2; December 2010
- [11] Urme Binte Salam, Muhammad Nubli Abdul Wahab, and Ahmad Bin Ibrahim, " The Effect of Zikir on the Performance Psychology of Diploma Student through Heart Rate Variability Biofeedback", *Universiti Malaysia Pahang*.
- [12] Prima Vitasari, Muhammad Nubli Abdul Wahab, Ahmad Othman, Muhammad Ghani Awang, "The Use of Study Anxiety Intervention in Reducing Anxiety to Improve Academic Performance among University Students", *International Journal of Psychological Studies* Vol. 2, No. 1; June 2010