

A pilot study of the effect of zikir on the performance psychology using heart rate variability (hrv)

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Abstract— *Zikir has been known to have a direct impact on the individual. Zikir is able to help individuals make behavioral changes. Zikir is known to have an impact on the mind, emotions and behavior. An investigation was conducted to identify the extent implemented zikir able to help individuals make changes themselves. Clinical studies carried out by taking 6 respondents among secondary school students who were involved in the disciplinary problems. Zikir intervention enables us to make changes ourselves using the technique of "Heart Rate Variability" (HRV). Students were given technical chanting slowly, loudly, and several techniques of zikir. Conversion EmWave had recorded using a look at how the students were able to make changes themselves. The study found that students who successfully completed the zikir training able to make changes themselves. Students had successfully made a change to 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 able to be used to help students make the change themselves and improve their academic achievements. This technique can be used in schools to improve the effectiveness of prevention of disciplinary problems therefore enabling education programs to be implemented.*

I. INTRODUCTION

Emotions have a very close relationship with behavior. Individuals who are able to control emotions will be able to better control the activity. Calm the mind, emotions under control will lead to more organized activities and controlled behavior. [1] A study conducted shows that people who are able to control emotions have better athletic performance [2]. The same holds if associated with students. Individuals who are able to control emotions

will be able to control their behavior better and on beneficial ways. On the other hand, individuals who are unable to control emotions will be difficult to perform activities well. They are easily worried, restless and angry while doing activities. This provokes them to create disciplinary problems at school. Generally experimental work on psychophysiology stimulus variation and emotional, cognitive or behavioral response changes depending on the use of biofeedback approach [3][4].

Heart rate Variability (HRV) is termed as a joint time/frequency study of the beat-to-beat responses in the heart rate [1]. HRV biofeedback aims to control the oscillation variability in heart rate. [5]. Task (2011) states that there are three related types of spectrum: the VLF (very low frequency) frequency less than 0.03 Hz, LF (low frequency), with a frequency range of 0.03 and 0.15 Hz, and HF (high frequency) between 0.18 and frequency range 0.4 Hz [6]. HRV Biofeedback show potential in increasing performance and he also states many employees perform their cognitive function below the level of the actual cognitive ability caused by fatigue, work stress and boredom. [7]. Studies have revealed that higher HRV associated with creativity, psychological flexibility and capacity to adapt faster response in cognitive, affective and physiological emphasis [8]. Where as low HRV is associated with anxiety, depression and different cardiovascular. 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 [9].

Zikir in etymology is derived from the Arabic word 'dzakara' which means remembering, in terminology means a practice speech through recitations and remembrance of Allah. Zikir is the physical and mental

activities that form acceleration from reflection, attitude, behavior until the process of life that reminds us of God [10]. Zikir is able to calm the mind and plays a role in determining a person's character. Zikir 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 [11]. Zikir has psychological and spiritual benefits. Psychologically, it gives a sense of spiritual comfort and it gives a sense of being closer to God [12]. When a person is more likely to do good deeds such as reciting zikir and remembering Allah, Allah will spare him from committing sins therefore helps forming a good personality within that individual.

Recent researches [13] have publicized the consequence of HRV biofeedback to the development of some cognitive functions in both simulated and real industrial operators. Patients with coronary heart disease (CHD) have psychological stress exhibit decreased vagal control of heart rate (HR), as measured by spectral analysis of HR variability (HRV) [14].

II. RELATED WORK

A. *Nijmegen Questionnaire*

Before the data was collected, users were required to answer Nijmegen questionnaires. Answered questions will measure the extent to which family history and health status is. This is important for the selection of appropriate samples in which the student does not have health problems such as asthma and mental illness. This information is important for students and teachers to enable them to identify the strength and weaknesses of personality. This information is important in designing the programmes of modifications in students' behavior.

B. *Biofeedback Protocol*

In making students' disciplinary behavior change, students are taught on methods to control emotions and strengthen it. Methods or protocols focusing on breathing that uniform, focusing on mind and physical control. Through this protocol, students were asked to control on focusing their mind, heart rate and respiratory control. Controlling of these components has a direct relationship with emotional performance. Individuals who are able to control emotions, have a direct effect on pulse and vice versa. Protocols which are taught to the participants are in the form of breathing exercises and focusing on the mind.

Students are required to do the work out 3 times a week for 20 minutes to familiarize themselves with the methods of controlling the mind, controlling the pulse and respiration. Students are required to do the training for 4 weeks. During this training period, students are required to

attend the biofeedback training room and undergo the required training.

This monitoring method is also implemented to allow students to self change naturally according to the demands of themselves to change and to be a better student. Students are not required to inform their friends that they are involved in the recovery programme. This situation is designed to enable students to apply themselves in understanding the concept of changing naturally in the learning environment and local partners alike. This program does not separate students from their classmates, but they are allowed to hang out with their friends in common, but with self-control avoiding the bad things and focus more on behavior changes. This process is implemented to build the inner strength on how to deal with peer pressure and make the selection that is good or otherwise at the expiration of the training session.

C. *Training Session*

The Training sessions were conducted in a quiet room reserved for the participants of the study in a school in Kuantan Pahang, Malaysia. Each participant attends a training session at the same time and same day every week. Training is given to individual participant. After that is a brief description of the proposed training intervention. Protocol by Lehrer et al. [17]. In the first session participants were introduced to the experimental group biofeedback equipment, training methods and protocols proposed by Lehrer et al. [17]. Each participant must breathe in a relaxed state of mind and the resonance with swing heart rate (HRV) they are measured. They were instructed to breathe with rate 6.5, 6, 5.5, 5 and 4.5. for about 2 minutes to find the resonant frequency of their perceived RSA is the highest. [8][17]. Vaschillo et al [18] suggested that finding the resonant frequency is very difficult.

III. METHOD

Method in this study includes description of participants, and procedure. The purpose of this study is to measure the coherence in psychophysiological that is "a state of sustained positive emotion, a high degree of mental and emotional stability, constructive integration of the cognitive and emotional systems and increased synchronization and harmony between cognitive, emotional and physiological systems" [15]

A. *Participants*

The sampling is done by selecting students from five secondary schools. These students who have been identified are those who have low academic achievements and was always involved in the violation of discipline in schools. A total of 6 students was selected as a sample and they are going through a rehabilitation programme behavior using chanting and biofeedback methods.

B. Procedures

The intervention training group received five sessions of biofeedback training chanting which involves a single week session. These five sessions were selected based on previous studies, which can improve performance [7] [8]. Each session lasted at least 15 minutes, a total lack of the length of each session or inadequate training might be considered as error in methods and concepts in the study of biofeedback [16]

The students were encouraged to relax and sit on a chair calmly. After properly connecting the ear sensor, a monitor viewing the heart rhythm pattern either VLF, LF and HF. Their heartbeat rate would be measured and recorded using the emWave desktop Software Kit devices to detect their emotion through their heart rate rhythm pattern.

In the first procedure, the baseline was fixed at 3 minutes. While they are in a relax situation, which is in a normal situation, their heart rate was recorded for 3 minutes and stopped.

Later, they were asked to recite zikir “Laila ha illallah” with tongue for 3 minutes.

Continuously with that procedures, they were asked to recite zikir “Laila ha illallah” in their heart for 3 minutes.

Finally, the students were asked to recite zikir “Laila ha illallah with tongue and their heart together for 3 minutes. At this stage, data was collected to measure the average HRV range and coherence ratio percentages. In the exercise, students were expected to achieve high frequency (HF) coherence.

IV. RESULT

The result presents the demography profile of participants, average coherence rate and overall grade point average. These are explained below.

A Demographic profile of participants

The demographic profile of participants displays students’ gender, age and race. The participants were of six male student, age 17 years old.

B. Average Coherence Rate

The aim was to assess the physiological state of coherent, failing which students can change emotional coherence reading will increase. Figure 1 shows the individual HRV before and after training, and accompanied by the teaching chanting method. Coherence after zikir is higher than normal (baseline). According to the average coherence rate, students in experiment group, the coherence of HRV biofeedback from baseline to zikir recitation effect was so effective because most of the cases coherence was increasing.

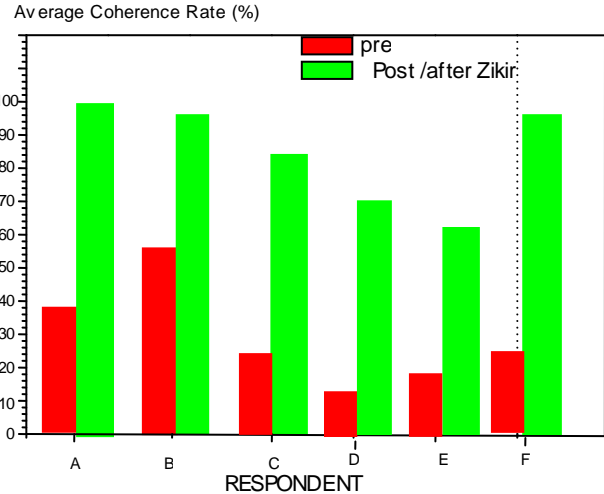


Figure. 1. HRV responses for individual: pre and post

Table 1 shows a comparison of the mean of the coherence is only 28.3% pre and post the chanting rose to 86.3% with a standard deviation was 14.1 pre and post is 13.95

TABLE 1. MEAN VALUES, STANDARD DEVIATION OF AVERAGE COHERENCE RATE: AT PRE AND POST

Mesures	Mean values	Standard Deviation
HRV		
Pre	28.3	14.1
Post	86.3	13.95

C. Overall Grade Point Average

Table 2 shows the performance of each respondent with an overall average grade average was 7.79 pre and post the chanting is 6.70 and the standard deviation was 0.98 pre and post is 1.14. This represents an increase academic achievement after doing zikir intervention.

TABLE 2. ACADEMIC PERFORMANCE PRE AND POST

Groups	Overall Grade Point Average	
	pre	post
Experiment Group		
1. Respondent A	8.63	7.88
2. Respondent B	8.71	7.00
3. Respondent C	7.25	6.88
4. Respondent D	7.75	6.88
5. Respondent E	8.50	7.25
6. Respondent F	5.89	4.33
Measures		
Mean values	7.79	6.70
Stand. Deviation	0.98	1.14

Note: Overall GradePoint Average for school students' smaller is better performance

V. DISCUSSION

The observations show that there is a change in HRV readings in response to the changes in students' psychophysiology. HRV detects signals after undergoing training on emotional remembrance. When students are start to change to more emotional calm the HF (high frequency) also increases. When coherent sample is in a state of calm pulse wave is very smooth then HF will increase. Otherwise, when individuals in a state of emotional change pulse wave- variable and VLF and LF will increase.

VI. CONCLUSION

Overall, a pilot study found that a combination of nijmigen questionnaires, modules biofeedback chanting and breathing exercises can be used to help students at risk for making behavioral changes. This process can be implemented in schools as strengthening program performance and student behavior. Although, this method uses biofeedback devices require expensive, it should not be a barrier to the school and the Ministry of Education to provide biofeedback equipment and training to the teachers involved in the program improved student outcomes. Training programs and the implementation of this module will make the process of counseling and student performance improvement becomes more interesting and dynamic.

This program introduced a new dimension in the recovery behavior in turn helps reduce the rate of student participation in a bad symptom. Processes implemented should be strengthened and expanded to more number of students with better skills that increase program effectiveness prolonged. Parents of students involved in this process should also be informed that their child has turned into a better student. This allows parents to accept their children's behavior change and support the changes made. Duration of behavioral changes that can be made by students is highly dependent on the extent to which force themselves to maintain the new attitudes and emotions have learned through this method. The school should take positive steps to enable behavior change among at disciplinary problem students can last longer and be able to shape students who can build a better future.

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