The Implementation of Achievement Goal Theory Towards The Achievement of Students’ HRV

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Abstract: This experiment was about the implementation of the achievement goal theory towards achieving the targeted HRV score. It was also about the role of motivation in encouraging changes in a person. Consequently, the achievement of the targeted HRV score would help overcome laziness among the students involved. 15 secondary school students at the age of sixteen were chosen for this experiment. The students involved were known to have some laziness problems. The experiment was to observe and study the relevance of the achievement goal theory to the changes within the students in order to achieve the required HRV score. The students were taught and instructed to perform resonant breathing and dzikr recitation. Both were the techniques implemented for the experiment. A biofeedback device was used to monitor the changes in the students’ HRV as the experiment progressed. At the end of the experiment, it clearly showed the relevance of the achievement goal theory to the achievement of the HRV score and thus the path towards the elimination of laziness.

Keywords: achievement goal theory, laziness, slow/resonant breathing, ‘dzikr’, biofeedback, heart rate variability(HRV), motivation

INTRODUCTION

Achievement Goal Theory

The achievement goal theory can be defined as any of numerous theorems of willingness that discern two kinds of success pursuits, goal-oriented, ego-oriented, that unite such dissimilarities in each person's assumed capacity for the job and their accomplishment conduct.[1] Previous studies have shown that goal is crucial as a form of achievement or performance. In the theory of motivation developed by Locke and Latham in 2002, goal and performance has a strong relationship [2]. During the past two decades, students’ goal orientation has driven an understanding on achievement motivation in education [3][4]. Nowadays, investigation in achievement goal orientation in terms of motivation, spread tremendously in many disciplines of knowledge especially in sport psychology, education and social [5]. It was indicated that goal setting has positive impact on behavior which described goal as a motivation in achieving success [6]. Past research revealed that motivation is the indicator of task persistence and academic behavior among youth [7][8][9]. Thus, a motivated person would put full efforts, has strong will power; attempt to master the task and other positive attitudes or behaviors to succeed. The energy of behavior towards positive stimulation could be nurtured through achievement goal’s orientation by putting efforts to get positive results [10][11]. An effort or getting positive results depends on the level of one’s competence. If it involves an intra-personal purpose, achievement is based on the mastery task goal without comparing with other’s performance [12] Previous study showed that goal is the important element in driving performance. From the intention of goal, it would direct to the efforts and persistence strategy. Finally, it would influence behavior or performance towards the outcomes [2]. However, an intra-personal purpose depends on the intention of goals, as intention is a psychological process that affect efforts and attention [13]. A person who has goal would put up maximum efforts that would affect his/her achievement or performance [14][15]. Thus, a person would concentrate on the activities or task, regardless of other individual's performance. This indicated that an intra-personal purpose would direct to concentration, in order to develop strategies. Previous studies have proven that concentration leads to winning competition among athletes as they perform the ability in controlling thoughts, arousal and attentional focus [15][13]. For example, a gold medal winner in Olympic 1984 stated that her goal was only to perform the best of her ability and did not bother about other competitors [16]. Thus, an intra-personal purpose towards achieving a goal is an important element.
Laziness is caused by failure in self-regulation which was induced by the lack of achievement goal orientation. From the psychological perspective, by focusing on the mastery goal, student’s performance is based on his/her own achievement without comparing with others. In order to investigate the students’ performance from the psychophysiological perspective, biofeedback training is one of the mechanisms to enhance their ability in certain task. Furthermore, the heart rate variability analysis has been proven as a measurement in quantifying the mind-body connection to describe attitude such as laziness which can be explained in the theoretical framework as follows in Figure 1.

In order to nurture the achievement goal orientation, some of the researchers have proposed a framework to investigate the relationship between goal and achievement [4]. Pioneered from a framework developed [4], it was expanded to a dichotomous, trichotomous framework constructed later [17][18][19] and finally a 2x2 Achievement Goal Framework [17][20] has emerged as an achievement goal theory (as shown in Figure 2).

From the framework, they emphasized on the mastery and performance goal approach [17][21][4][22]. They divided the achievement goal into four orientations which are mastery goal approach and mastery avoidance approach which involve achievement within a person. Meanwhile, performance goal approach and performance avoidance approach involve achievement relatively with others [23][11][22].

**Figure 1: Theoretical Framework**
The framework of the achievement goal theory was created to investigate the self beliefs, achievement values and goals. These three kinds of orientation are important in order to investigate their level of motivation and achievement [24].

From the achievement goal framework (as shown in Figure 2), the mastery goals approach is a competence within intrapersonal standards. It has been reported to demonstrate more positive outcomes compared to the performance goal approach [25][3]. Students who demonstrated an interest in gaining knowledge or master in any given task, known to perceive mastery orientation [5]. They have personal orientations and know well whether to engage or avoid achievement [5][26]. Finally, the mastery goal would develop a deep learning strategies, self-efficacy, self-regulation in achieving goal [27][28][3][4].

This intrinsic interest or motivation would keep individuals engaging in any given task at their own qualities [29]. Usually, students who have this kind of intrinsic motivation would persist doing it, strive for excellence, goal directed, putting efforts to understand and improve task or material in depth, think that a task is important and useful and have different strategies in achieving their goal [21][30]. Therefore, by using mastery goal, a person who acts towards goal setting would put maximum efforts that influence his/her performance [14][15], without bothering other people’s performance. This approach focuses on positive strategy in goal orientation such as attaining new skills and improving competence within one’s self. They usually would give full effort to understand and learn new skills and show persistence. Meanwhile, the mastery avoidance approach is to avoid negative possibilities such as losing skills or unable to compete. Their goal is to avoid misunderstanding and not to forget the lesson [22].

Meanwhile, in a research [31], it was found that performance goals and mastery goals approach were related to self-regulating strategies [18][18][32]. A student, who implements the mastery goals, will use a deep approach in a positive way. Meanwhile the task value had a direct effect on mastery goals and deep approach. This indicates that a person who has intrinsic motivation would master and has deep intention in finishing the given task, finally would implement strategies in learning processes. Dweck (1986) described a person who has intrinsic motivation as an individual that seek to increase their competence or master something new as his/her goal orientation [22].

Beghetto [33] also added that students who have mastery goal orientation exhibited high levels of efforts and engagement, implementing adaptive learning strategies, show interest in learning, dare to experience challenges and difficulties [3][34]. They believe that success is driven by hard work and persistence and are able to learn from mistakes [35]. As a result, a mastery goal approach is the positive predictor to achievement [36].

Meanwhile, the low-academic abilities are known to use the performance-avoidance orientation that has been linked to maladaptive behaviors. They are involved in cheating, avoiding help when needed, less effort, and procrastination. This maladaptive behavior is closely related to the symptom of laziness [18][34][33]. It was indicated that low academic performers tend to demonstrate negative attitudes whenever the expectation of gaining rewards did not develop as what they desired. Thus, they exhibit low performance compared to others. However, Beghetto [33] in his study revealed that performance avoidance is not a sign of laziness but it is resulting from the lack of confidence and support. Although Beghetto’s finding is not parallel with the previous ones, more recent research proved that performance avoidance has negative impact on the achievement [24].

Figure 2: 2x2 Achievement Goal Theory Framework
More recently, research done by Jang and Liu [23] using the cluster analysis, revealed the presence of five clusters of students with significant differences in terms of academic goal profiles. They found that some of the maladaptive students with low ability in academic have low mastery and performance goals approach and avoidance. They also found that these students were not interested in learning or doing better than others. The maladaptive behaviour such as lazy, indicated that the students, are not even concerned about failures, experienced inferior complex or losing skills. This behavior indicated that the low and average academic ability had low motivation, thus would affect their achievement goals.

Thus, it was proven that when mastery goal orientation was implemented, students demonstrated higher levels of learning strategies compared to those who compared their abilities and perception with others [5]. However, the goal orientation should be specific, attainable, accepted, have feedback and evaluation on their performance [2]. Although goal orientation is recently reported to exhibit anxiety in the performance [37], they found that there are many ways to overcome the anxiety in performance. They have identified methods such as seeking help from The Creator specifically through praying, applying more practices, breathing and relaxation and mind setting to perform. These methods were being implemented recently to increase performance based on the goal orientation through the biofeedback technique.

Self-Regulation
In dealing with laziness, students would be investigated psychologically on what makes the attitude or behavior happened and what processes involved underlying it. Thus, self-regulation would be the best mechanism to describe how laziness happens and why it drives a person to that particular state. According to the causes of laziness, this trait happens because of lack of self-regulation within a student which is a result of failure in achievement goal orientation [38]. Most students who are weak in self-regulation and emotions, fail to practice effective learning strategy. In fact, they possess negative motivations such as low self-efficacy and low achievement goal orientation.

It has been reported that a person who exhibited low self-regulation was applied lower task persistence [39]. A non-self-regulated student always becomes afraid and anxious [20][40]. A previous study has revealed that a higher self regulated person exhibit high self-efficacy, have strategies in learning and finally posits good performance [41]. They agreed that self-regulated students have higher motivation. From that particular self value, they implemented a better learning strategies with their own initiatives and respond actively on any situational demands [23]. The regression analysis showed that students who had higher self-efficacy employed more learning strategies. Meanwhile, their research found that there was a significant difference in using higher-level learning strategies, such as elaboration and critical thinking skills, between students whose have higher or low self-efficacy [41]. Thus, this finding indicates that self-efficacy in an important value in the self-regulation among students, in order to demonstrate performance and achievement in learning.

Laziness
Previous study demonstrated that laziness appeared because of the failure in self-regulation. The failure in self-regulation is directly related to lack of achievement goal within a person [38][29]. It showed that laziness has strong relationship with low achievement goal orientations related to the performance benchmark. Students with poor self-regulation failed to use the effective learning strategies and hold negative motivational beliefs such as low self-efficacy and low performance goal orientations. As a result, students with poor self-regulation frequently experience fear of failure and anxiety [20][40].

From the learning processes and performance, it was reported that lazy students with anxiety disorder exhibited a passive attitude in their studies such as lack of interest in learning, poor performance in examination and do poorly in assignments [42]. The symptoms of anxiety among students are fast heartbeats, nervous, panicking, feeling helpless while doing assignments, or lack of interest in difficult subjects [43].
More recently, Chen and Usher [44], found that students who have negative emotions such as anxiety, giving up and boredom will disrupt their ability to maintain and continue their efforts and interest in any given task [45][46]. These negative emotions such as anxiety will affect the performance goal among students. [47][45][48]. Thus, the negative emotion will influence their capabilities in the cognitive, motivational and behavioral at any given task [44][49]. Finally, anxiety trait will influence the level of efforts, persistence, resilience and performance [50]. Thus, students who failed to self-regulate the negative emotions will reduce efforts and persistence which, in turn will influence the performance.

METHOD

The objective of this experiment was to analyze the effects of self regulation techniques training to students’ HRV readings. Ultimately, it was to confirm the implementation of the achievement goal theory in this experiment, and thus helped the elimination of laziness in the students involved. The techniques being implemented were resonant breathing and dzikr recitation. 15 students were involved in the experiment. All of them were 16 years of age. The students’ responses were based on their biofeedback responses, the HRV readings. 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 an experiment involving HRV done before. [51]

The students consisted of 8 boys and 7 girls. The samples were selected based on their academic performance gathered from the School Education Analysis System (Sistem Analisa Pendidikan Sekolah - SAPS), which is an analysis for students’ advancement in the examinations. . It is a centralized system to accumulate all relevant information about the examinations, in order to accommodate the process of storing the students’ current examinations data. It is also to enable the scrutiny of the data by relevant authorities and parents.

During the biofeedback training in the clinical-experiment, it was done with blind-test. It meant that the students were randomly picked and their self regulation would be examined without knowing their academic background. This method was being applied in order to avoid the researcher from being biased while executing the communication script stimulation. So, the students were only exposed to the script by the researcher during the clinical–experiment.

By using the ear-clip sensor to investigate the samples' HRV, they underwent the four procedures of biofeedback training protocols; baseline, pre-recorded zikr, self zikr and self-talk stimulation. (see Figure 3.7). They were seated on a comfortable back rest chair, in a quiet and air-conditioned room. This comfortable environment was important in order to make sure that the students were in a good mood and became calm throughout the session without any disruption and disturbance of uncomfortable situations that might affect their emotion. The disruption in their emotion will automatically affect their heart rate and this would make some changes in the data being recorded during the training.[52]

A 12 inch laptop was set up in front of the students showing the pattern of their heart rhythm, the coherence ratio indicating VLF (red colour), LF (green colour) and HF (blue colour) (see Figure 3.9). The students were provided with a monitor showing their level of heart rate. They were encouraged to achieve 100 per cent LF coherence while undergoing the training through breathing technique and self-zikr stimulation.

Being one of the self regulation techniques, slow breathing exercise was implemented, whereby each student was instructed to execute their breathing accordingly. They were told to inhale deeply for 3 seconds and exhale fully for 7 seconds. This particular breathing is called Resonant Breathing. It is slow breathing, (around 3-7 breaths per minute) and relaxed abdominal breathing that can produce a unique state of balance in the autonomic nervous system and resonance or communication between body systems that are connected to breathing.[53]

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)

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 tried to create a friendly environment with the students and tried to make the students felt comfortable. These were the phrases used by the researcher:

“Allow your arms to feel heavy and relaxed. Visualize relaxing at the beach on a warm, bright day. You are in a comfortable recliner chair. No one is close by. All you hear are the waves lapping at the shore and sea gulls in the distance. You may feel your hands warming”.

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 following is the script used:

“I want you to clear your mind, Concentrate fully on this session. Imagine that you are now alone on an island, so peaceful and soothing”.
“I want you to forget all the problems in your mind. Now, it is just you and I. You may begin your diaphragm breathing.”
“Relax…”
“Okay. Let’s begin the session now.”

The next stage of the experiment was pre-recorded dzikr recitation. The pre-recorded zikir session took 3 minutes. The students were asked to listen and recite the “La ilaha illa Allah” dzikr by following the pre-recorded zikr from the voice recorder. The dzikr was recited in fast pace while the diaphragm breathing technique demonstrated slow pace of breathing which was to achieve 6 breaths per minute. The contrast in the pace rhythm between pre-recorded zikr and diaphragm breathing technique would measure their effort in finishing a difficult task. The following is the script being used:

“Now, I want you to clear your mind and focus towards getting 100% LF coherence. Try to relax and ease yourself, inhale and exhale slowly. Inhale… 1,2,3.4 exhale 5,6,7,8,9,10,11. (script being repeated)

“Inhale… 1,2,3.4 exhale 5,6,7,8,9,10,11” (repeated 3 times).
“I want you to recite dzikr in your heart along with the pre-recorded dzikr that I am going to play soon. While reciting the dzikr in your heart, do your breathing the right way”

“If your coherent reading is decreasing, keep on with your diaphragm breathing and dzikr reciting until the reading increases back. Do your best, increase the coherent readings and maintain it as long as possible.”

“We start now with the “La ilaha illa Allah” dzikr.

The third protocol was the self-dzikr which allowed the sample to recite the La ilaha illa Allah dzikr with his/her own initiative at own pace, without being forced. However, the targeted goal remained the
same which was to achieve the 100% HF coherence score in the power spectrum. The students were asked to recite the inner self-dzikr quietly for 3 minutes. After 3 minutes, they were asked to stop.

“Now, I want you to recite dzikr in your heart on your own while looking at the screen in front of you, that is showing your coherent readings. Try to increase your coherence and maintain it as long as possible. If it decreases, continue doing your diaphragm breathing until it reaches the LF coherence.”

“Get ready. We begin now with La ilaha illa Allah in your heart.”

The next protocol was the self talk protocol. Before the protocol started, the sample was being stimulated by a self-talk script. After 30 seconds reciting the dzikr, the sample was being exposed to the self-talk script. The script was as follows:

“Just now, you have seen your coherence results. Take a little bit more time for yourself to really internalize the dzikr.”

Now … I want you to keep on concentrating on La ilaha illa Allah. I know that you could improve your coherent score. Clear your mind, concentrate fully on the session. Forget all your problems, push them aside! Just do your best with the dzikr. Concentrate fully on the phrase. Believe that you can get the 100% LF coherence. I believe you could!

Again… try to relax, inhale and exhale slowly. Now, place your palm on your stomach. Try to feel the slow flowing air into your lungs, to your brain, throughout your whole body.

Inhale…. Exhale slowly… We do it again. Inhale…… Exhale slowly…. (twice). Now recite dzikr in your heart … La ilaha illa Allah… (low and long intonation). Keep on reciting La ilaha illa Allah…(twice).”

“Try to internalize La ilaha illa Allah with feelings of repentance … with humility… as a servant to the Almighty Creator.”

“Imagine that you are now in front of Allah swt. (pause) Lower your gaze in front of the Almighty with feelings of repentance.”

“Whisper in your heart … O, Allah, I have been negligent in remembering you. I have been unfair and untrue to myself, dear Allah. Help me back to Your Path, O Allah. Listen to my confession, a sinful servant, You are the Most Great. La ilaha illa Allah… There is nothing worthy of worship except You (Pause).

Keep on reciting “La ilaha illa Allah” in your heart until I give you the signal to stop. Keep on reciting “La ilaha illa Allah” “La ilaha illa Allah” “La ilaha illa Allah” Once in a while, look at your coherent score. Try to increase it. Breathe slowly and continue your dzikr…

“La ilaha illa Allah….“La ilaha illa Allah....”

RESULTS

GAP = good academic performance; LAP = low academic performance

Figure 3.1 shows the results of t-test for mean values in the Baseline protocol between academic performances. The results compared the coherence score in the VLF, LF and HF during the clinical experimental test. The bar chart indicates that the GAP have the highest score (m=68.5) in the LF coherence score compared to the LAP (m=64.4) in the Baseline protocol. Meanwhile the VLF (m=15.2 for the GAP; m=19.4 for the LAP) and HF scores (m=16.3 for GAP; m=16.2 for LAP) were low in both group of academic performance.
Figure 3.1: Mean values for the baseline protocol among academic performances.

Figure 3.2 illustrates the comparison between VLF, LF and HF coherence score during the Pre-recorded *dzikr* protocol. It indicates that the good academic performance (GAP) have highest LF coherence score ($m=53.3$) compared to the low academic performance (LAP), $m=42.7$. The higher result in the LF for the GAP students was parallel with the previous study [54], which stated that positive emotional would affect behavior in terms of efforts and persistence. The GAP students were reported to plan strategy to improve performance [21]. Meanwhile in the VLF coherence score, LAP students ($m=41.5$) indicated higher score compared to the GAP students ($m=26.4$). However, the HF score for LAP ($m=15.8$) and GAP ($m=19.3$) students were at the lowest. The lowest score in the LF for LAP indicated that these groups failed to achieve 100% LF in the Pre-recorded *Dzikr* protocol as the targeted goal in the clinical experiment.

Figure 3.3 illustrates the comparison on the mean values in the Self-*Dzikr* protocol for GAP and LAP students. It was indicated that the VLF for LAP ($m=54.6$), was the highest score compared to the GAP ($m=21.8$) during the Self-*Dzikr* protocol. Meanwhile, in the LF coherence score, it was indicated that the GAP students had higher score ($m=36.4$) compared to the LAP students ($m=25.7$). It also indicated
the same result where the GAP students had higher score ($m=33.5$) compared to the LAP students ($m=28$) in the HF coherence score. The higher results in the HF might be due to some intentional task, mild stress, a cognitive reaction on orienting response and reduction in parasympathetic cardiac control [56][58]. Again, in the self-dzikr protocol, the LAP students failed to achieve the highest scores in the LF coherence scores which showed that they were not self-regulated to achieve the targeted goal successfully. This indicated that when the samples loose control on the targeted goal, the response for the frequency in the VLF scores becomes higher [55]. The higher VLF coherence score by the LAP students were also supported by Kuhl and Kraska in their research[59], which indicated that the low performance students have poor self-regulation attitude towards given tasks. Meanwhile, they found that high-IQ children were able to pay attention on the instructions to be followed towards targeted goal.

![Figure 3.3: Mean values for the Self Dzikr protocol among academic performances.](image)

Finally, the students underwent the Self-Talk protocol which demonstrated that the GAP students have the highest coherence score in the LF ($m=73.9$) compared to the LAP ($m=51.6$). It was illustrated in Figure 4.4, which showed the comparison of the mean values among LAP and GAP. In the Self-Talk protocol, the coherence score for VLF indicated that the GAP have lower score ($m=15$) compared to the LAP ($m=27$). Meanwhile the HF coherence score for the GAP students was lower ($m=11.1$) compared to the LAP students ($m=17.4$). Finally, in the Self-Talk protocol, the LAP students totally failed to self-regulate themselves in achieving the 100% LF coherence score. This indicated that the LAP students have low effort, motivation and self-regulation in terms of achieving goal in the task given.
As a summary, the LAP students failed to achieve 100% LF coherence scores in all protocols which indicated that they are non-self regulated individuals in order to finish the task successfully. They have higher results in the VLF coherence score. As were investigated in the previous study on the effectiveness of self-relaxation, the six breaths per minute and reciting dzikr during the biofeedback training and techniques, the VLF coherence score should decrease parallel with the increment in the LF score [60]. It showed that they failed to implement the biofeedback training where they easily gave up to achieve the targeted goal by failing to apply the method to increase the scores in the LF. However, the GAP students successfully achieved the targeted goal during the clinical experiment which indicated that they have put their full effort, high motivation and followed the instructions to achieve the 100% LF coherence score. The higher results in the LF coherence score was related to the sympathetic cardiac control and a decrement in the parasympathetic control, sometimes involved both, as a sign of stress [58]. The results obtained from the clinical experiment were consistent with a previous study [55] GAP students. It was reported that the goal orientation would make them become proactive, have the ability in problem solving and could easily adapt to the new environment [2]. The findings are positively consistent with this study, in terms of self-regulation by investigating their performance during the protocols. This self-regulatory persistence was parallel with the previous research which also revealed that persistence while finishing the given task was an indicator to measure self-regulation/control [61]. It was because various kinds of difficulties will test their self-control on how persistent they were while undergoing the protocols. Thus, the self-regulated student could be concluded as a persistent.

In order to test the differences of VLF, LF and HF in the protocols (Baseline, Pre-recorded Dzikr, Self-Dzikr and Self-Talk) between good and low academic performance, the One Way ANOVA was used. The ANOVA test indicated that there was no significant difference statistically in the mean value between protocols and the good academic performance (GAP), as shown in Table 4.7. The One Way ANOVA test below was done to test the differences of VLF, LF and HF coherence score among the 10 members of the GAP students. In the VLF coherence score during the Baseline, Pre-Recorded Dzikr, Self-Dzikr and Self-Talk, there were no significant difference statistically in terms of academic performance. The analysis yielded a f-ratios value of 0.59 which was not significant at the 0.63 (p<0.05).

In the LF coherence score, the GAP students indicated that there was no significant difference statistically in terms of academic performance. The analysis yielded a f-ratios value of 1.89 which was not significant at the 0.15 (p<0.05).
Besides that, during the protocols in the clinical experiment, the HF coherence score yielded a $f$-ratios value of 2.58 which was not significant at 0.07 ($p<0.05$). Thus, this indicated that the VLF, LF and HF coherence score was not significant statistically in terms of good academic performance.

**Table 3.7:** One Way ANOVA test for differences of VLF, LF and HF between protocols for Good Academic Performances (GAP).

<table>
<thead>
<tr>
<th>AP</th>
<th>CS</th>
<th>Protocols</th>
<th>n</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
<th>$f$</th>
<th>$p$</th>
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<tr>
<td>1=GAP</td>
<td>VLF</td>
<td>Baseline</td>
<td>10</td>
<td>15.20</td>
<td>19.09</td>
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<td>48</td>
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<td></td>
<td></td>
<td>Self zikr</td>
<td>10</td>
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<td>72</td>
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<td></td>
<td></td>
<td>Self-Talk</td>
<td>10</td>
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<td>20.48</td>
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<tr>
<td>LF</td>
<td></td>
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<td>10</td>
<td>16.30</td>
<td>16.52</td>
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<td></td>
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<td>10</td>
<td>19.30</td>
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Notes: $p<0.05$
AP = Academic Performance
GAP = Good Academic Performance
CS = Coherence Score

However, in the One Way ANOVA test for the LAP students shown in Table 3.8, it indicates that there was only a significant difference in the VLF ($f=2.90$, $p=0.05$), where the Self-Dzikr was the highest mean value at 54.60±37.41, whereas, the Baseline protocol was the lowest mean value at 19.40±18.91.

In the analysis shown in Table 3.8, which explains the comparison among VLF, LF and HF coherence scores with the low academic performance (LAP) students. In the LF coherence score, the analysis yielded a $f$-ratios value of 1.04 which was not significant statistically at 0.39 ($p<0.05$). Besides that, the analysis of the HF coherence score was also not significant statistically at 0.07 ($p<0.05$) with the $f$-ratios value of 2.62. Table 4.8 indicates that the LAP students failed to implement and adapt the biofeedback training such as diaphragmatic breathing technique and reciting the dzikr into their mind which has been proven could improve performance [60]. It shows that the LAP students failed to achieve satisfied results in the given task. [62]

The methods in the experiment involved the implementation of the self-regulation script in the clinical experiment protocols. The samples were being evaluated on their self-regulation towards the given tasks in different kind of protocols. Thus, their heart rates were being investigated from the baseline until the self-talk protocols. The implementation of diaphragm breathing technique and dzikr recitation with full effort during the protocols would affect their scores in the heart rates readings. The instruments of research consist of questionnaires (DASS questionnaire), biofeedback devices and the clinical experiment involving the sixteen year-old students. In the clinical experiment, the self-regulation stimulation script was being implemented to investigate their achievement goal orientation.
### Table 3.8: One Way ANOVA test for differences of VLF, LF and HF mean between protocols for Low Academic Performances (LAP).

<table>
<thead>
<tr>
<th>AP</th>
<th>CS</th>
<th>Protocols</th>
<th>n</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
<th>f</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>2=LAP</td>
<td>VLF</td>
<td>Baseline</td>
<td>10</td>
<td>19.40</td>
<td>18.91</td>
<td>0</td>
<td>52</td>
<td>2.90</td>
<td>0.05**</td>
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<tr>
<td></td>
<td></td>
<td>Pre-recorded Zikr</td>
<td>10</td>
<td>41.50</td>
<td>24.51</td>
<td>15</td>
<td>92</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Self zikr</td>
<td>10</td>
<td>54.60</td>
<td>37.41</td>
<td>6</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-Talk</td>
<td>10</td>
<td>27.00</td>
<td>31.78</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
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<tr>
<td>LF</td>
<td>Baseline</td>
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<td>10</td>
<td>16.20</td>
<td>14.76</td>
<td>0</td>
<td>52</td>
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<td>0.39</td>
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<td>10</td>
<td>15.80</td>
<td>6.30</td>
<td>8</td>
<td>27</td>
<td></td>
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<tr>
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<td></td>
<td>Self zikr</td>
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<td>28.00</td>
<td>29.01</td>
<td>0</td>
<td>100</td>
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<td></td>
<td></td>
<td>Self-Talk</td>
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<td>17.40</td>
<td>14.08</td>
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<tr>
<td>HF</td>
<td>Baseline</td>
<td></td>
<td>10</td>
<td>64.40</td>
<td>30.28</td>
<td>6</td>
<td>100</td>
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</tbody>
</table>

** Significant \( p<0.05 \)

AP = Academic Performance  
LAP = Low academic performance  
CS = Coherence Score

### DISCUSSION

The intrapersonal communication is an exchange of message and information transformation within one’s self. Some researchers defined intrapersonal communication as self-talk, inner dialogue, reasoning or the processing of information. [63] However, others interpreted it as related to inner psychological processing in terms of cognitive, perceptual and motivational [64][65]. Thus, in order to motivate a person, self talk is one of the methods in psychology to attain the desired goal and finally, affect behavior [66]. Many athletes used the self talk method to increase motivation [67]. By using short phrases and neutral self-talk, it has positive impact on the motivational arousal and cognitive skills [6]. If it is implemented effectively, self talk could become a cognitive strategy in enhancing the motor tasks and performance [67] [68]. As an internal dialogue within a person in interpreting feelings and perceptions to regulate or change the evaluations, self talk gives some instruction that influence the way of thinking, thus driven to an action [6]. As reported in the early findings, self talk is about thinking of something [68], feelings [69] and self-persuasion to generate changes in the belief and behavior.

This experiment compared the coherence score in the HRV based on the protocols developed using the self-regulation stimulation script. The GAP students had successfully demonstrated higher score in all protocols compared to the LAP students. They performed well in obtaining the LF score in the baseline, pre-recorded-dzikr, self-dzikr and self-talk protocols. A self-regulated person was reported capable and has the ability in controlling anxiety that directed the person towards the increment in the performance and becomes successful.[37][70] The GAP students who posit higher concentration would lead to a good performance [13]. The person’s intend affects his/her performance even when
trying to maintain maximum effort [14][15]. Moreover, in a study on procrastination, it was revealed that a procrastinating student has low grades in his/her academic performance due to lack of self-control. [70]

However, the LAP students failed to achieve the target of the clinical experiment by having higher scores in the VLF. The higher scores in the VLF explain a normal breathing in the heart rate variability with 15 to 22 breaths per minute. Meanwhile the target in the clinical experiment was to achieve the 6 breaths per minute which was illustrated in the LF scores. By utilizing the Mann Whitney t-Test and One Way ANOVA test, their scores in the VLF, LF and HF in different protocols were being quantified. The techniques being taught to increase the LF coherence score were the implementation of the slow/diaphragm breathing technique and reciting the the dzikr [51]. A study has approved that the self-regulated students have the ability to control efforts in their way to achieve the targeted goals. Hence, they managed to achieve higher academic performance through goal orientation [71]. However, previous study showed that effort and commitment will arise together with the acceptance of a goal among individuals. Thus, this will affect the feedback and results on the goal performance [2]

CONCLUSION
From the findings in this study, it was yielded that self-regulation is an important element in one’s self to increase the achievement of any goal orientation and mastering task. If the students really maintain, focus, put full efforts in achieving the targeted goal, they could control their laziness. The effect of achievement goal orientation and mastering task was assisted by the self-talk, reciting dzikr and proper diaphragmatic breathing technique, helped to nurture the self-regulation. This self-control has significant impact on HRV data. The findings showed that HRV could become a benchmark in measuring and eliminate laziness from the human psychophysiological perspectives. It monitored the relationship between, mind, behaviour and body in mobilizing the self-regulation among students.

In practice, the ability in self-regulation to overcome laziness, will drive a person to become more successful in their daily activities. Thus, an inner motivation could determine their mind and action towards goal orientation. This goal orientation finally will positively influence the achievement among individuals. Thus, research on laziness should be expanded in all areas of work place, in order to optimize the productivity in daily activities. Starting from toddlers, teenagers and adults, self-regulation among them should be nurtured naturally through guidance and practices everyday. The measurement of laziness could be a guideline in the recruitment of an organization, enhance self-regulation among individuals, developing leaders and producing energetic workers. Thus, further research need to be done in terms of enhancing an investigation towards understanding the overall nature of laziness with respect to self-regulation.

Some recommendations on combining self-regulation elements with self-efficacy among students, ensuring the progress in the mind-body connection in a longer duration of assessment, bridging the process of self-control with academic performance and continuos training, in order to overcome laziness in the future. Mutual co-operation collectively between students, parents, school and society could enhance understanding on self-regulation within a person which would affect the education policy.

However, the results from the clinical experiment were an introductory to the measurement of laziness from the biofeedback training through heart rate variability judgment. There are some loops in the biofeedback training that could be enhanced in the future for mutual benefits. Loops in the time constraint, lack of training in the diaphragm breathing technique, implementation of an effective dzikr during the clinical experiment and the preparedness to undergo experiment diligently were some of the gaps recognized in this study.

Thus, to develop a better biofeedback training, this study needs longer time to test their self-regulation through different kinds of emotion or situation. Duration of the clinical experiment biofeedback
training is crucial, in terms of effectiveness of the biofeedback training. A regular training within a month, for example, could develop self-regulation among students to overcome laziness. It will help them to control stress, emotion and this kind of self-regulation will lead them to success. Hence, some enhancement in implementation of biofeedback training could improve their ability in the goal orientation. Finally, it would nurture a new generation with strong willpower and are self-regulated towards achievement.

In some cases, although it is a stressful event, a self-regulated person managed to overcome it and successfully met the objectives or goals that have to be achieved. Thus, with a longer duration of the clinical experiment with interventions programs, laziness could be measured with huge influence in changing attitudes among students. Furthermore, the replicate of samples is one of the factors that could confirm the validity and reliability of the biofeedback training through the protocols. A larger sample size would create complexity in data collection. However, the complexity is an important element to determine how accurate the biofeedback training is using the developed protocols. Apart from that, a research from the qualitative perspective would be an added value to the clinical experiment. The feedback on the training verbally, will give more information on the effectiveness of the protocols, ideas to improve the training, problems occurred within samples and other factors that would enhance the presentation and implementation of the training to measure and finally overcome laziness.

Recommendations in practice among students, policy maker, school, parents and society have a huge impact in the development of attitude within a person. Achievement goal as a benchmark to evaluate student’s self-regulation towards any given task. As a conclusion, self-regulation is one of the most important elements to investigate laziness among students. The ability in controlling and maintaining efforts towards a given task or goal was the indicator of self-controlling. The element of self-control in self-regulation would be the main factor that could reduce or eliminate laziness in daily activities. A person who could self-regulate towards achievement could be successful in managing life. Meanwhile a non self-regulated person failed to manage themselves towards success in any achievement or performance by having negative way of thinking, behavior and habits. Their laziness which is affected by lack of control in self-regulation will give negative impact towards achievement in daily activities. Thus, to overcome or eliminate laziness, a person should become self-regulated by nurturing and developing motivation, efforts and try to finish any task until completed successfully. As a conclusion, the experiment showed a very effective implementation of the achievement goal theories in improving the students’ HRV, measuring laziness and progressing towards the complete elimination of laziness.

References:
1. Psychology Dictionary, psychologydictionary.org