HARDINESS AND NAVAL PROFESSIONAL TRAINING PERFORMANCE IN ROYAL THAI NAVAL ACADEMY STUDENTS

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ABSTRACT

This descriptive research aims to study the correlation between the hardiness and the naval professional training performance of Royal Thai Naval Academy students. Subjects comprised of 216 selected students who were studying between years 1 and 4 in the 2009 academic year. Three kinds of research tools were used: personal data questionnaires, the Dispositional Resilience Scale15 test and the Students' Academic Results.

Results indicate that those naval students scored 26.54 points in hardiness; comprising of 9.17 points for commitment, 9.76 points for control, and 7.60 points for challenge. Interestingly, when differentiated by academic years and major subjects, most students score on a par with each other except those who had a different grade point average from the Armed Forces Academies' Preparatory school and the Naval Rating school who were found to have different hardiness; with students with good grades being more likely to have a higher hardiness. The correlation test indicates that hardiness has a positive correlation(r = .454) with the academic outcomes of the naval students (p-value < 0.01) and the three hardiness components (commitment, control and challenge) have a low correlation (r = .358, .398 and .210) while it was found that there was no connection between academic years and their hardiness. Multiple regression analysis discovered the positive link between their hardiness and their progress in their training performance. (predictability=20.4).

Findings from this research can also be used as a guideline to develop high calibre and appropriate behaviors in military students.

KEY WORDS : HARDINESS/ NAVAL ACADEMY/
NAVAL PROFESSIONAL TRAINING/ MILITARY STUDENT

83 pages

ความเข้มแข็งอดทนกับผลการฝึกศึกษาของนักเรียนนายเรือ

HARDINESS AND NAVAL PROFESSIONAL TRAINING PERFORMANCE IN ROYAL THAI NAVAL ACADEMY STUDENTS

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บทคัดย่อ

การศึกษาครั้งนี้เป็นการศึกษาเชิงพรรณนามีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์ระหว่าง ความเข้มแข็งกับการฝึกศึกษาของนักเรียนนายเรือ และหาอำนาจการทำนายผลของความเข้มแข็งอดทนต่อการฝึกศึกษาของนักเรียนนายเรือ ชั้นปีที่ 1- 4 ปีการศึกษา 2552 จำนวน 216 คน เครื่องมือที่ใช้ในการศึกษา มี 3 ส่วน ได้แก่ แบบสอบถามข้อมูลส่วนบุคคล แบบวัดความเข้มแข็งอดทน และแบบเสนอผลการสอบความรู้ประจำปีของนักเรียนนายเรือผลการศึกษาพบว่า นักเรียนนายเรือมีความเข้มแข็งอดทนเฉลี่ย 26.54 คะแนน ความมุ่งมั่นผูกพัน 9.17 คะแนน การควบคุม 9.76 คะแนน และด้านความท้าทาย 7.60 คะแนน โดยนักเรียนในแต่ละชั้นปีและพรรค-เหล่าที่ศึกษา มีระดับความเข้มแข็งอดทนไม่แตกต่างกัน ยกเว้นนักเรียนนายเรือที่มีคะแนนเฉลี่ยก่อนเข้าโรงเรียนนายเรือแตกต่างกันมีความเข้มแข็งอดทนแตกต่างกัน โดยนักเรียนที่มีผลการเรียนดีมีแนวโน้มที่จะมีความเข้มแข็งอดทนที่สูงขึ้นตามไปด้วย ในด้านความสัมพันธ์ พบว่าความเข้มแข็งอดทนมีความสัมพันธ์ทางบวก($r = .454$) กับผลการฝึกศึกษาของนักเรียนนายเรือ ($p\text{-value} < 0.01$) องค์ประกอบด้านความมุ่งมั่นผูกพัน การควบคุม และความท้าทาย มีความสัมพันธ์ค่อนข้างต่ำ ($r = .358$, $.398$ และ $.210$) ส่วนชั้นปีการศึกษาไม่มีความสัมพันธ์กับความเข้มแข็งอดทน ในด้านการหาอำนาจการทำนายผลการฝึกศึกษาด้วยการวิเคราะห์ถดถอยพหุคูณแบบขั้นตอน พบว่าองค์ประกอบของความเข้มแข็งอดทน สามารถทำนายผลการฝึกศึกษาของนักเรียนนายเรือได้ โดยมีอำนาจการพยากรณ์ร้อยละ 20.4 จากการวิจัยนี้สามารถนำมาประยุกต์เป็นแนวทางในการพัฒนาบุคลิกภาพที่เหมาะสมของนักเรียนทหารได้

83 หน้า

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
INTRODUCTION

Background and significance of the problem

The Royal Thai Naval Academy is the prestigious high school operated by the Royal Thai Navy. Its curriculums provide intensive courses in naval technologies, military-related knowledge, desired morality as well as physical trainings in order to develop future high-graded naval officers. The expected outcomes are to improve related capabilities and skills, leadership, morality, self-righteousness, responsibilities. The good morale and traditions of Thai navy as well as the will to preserve nation, religion, and the king are also highly anticipated. To quality as a naval cadet student, a candidate must meet the following criteria (1) first of all ones must qualify the general admission test administrated by the Royal Thai Navy, then enroll at the Armed Forced Academies Preparatory School for 3 years. After graduated from the school, students are expected to qualify, both in term of their general knowledge and their martial skills, to study specific forces of their choice. In particular circumstances, the Navy might intentionally offer the direct entry to high-calibre students studying at the Naval Rating school.

The Royal Thai Naval Academy generally offers both general knowledge and actual physical training which are intensively focused on naval-related subjects. The academic results of the training course will be processed as a prominent factor to determine future promotion after graduated. Ideally, the naval cadets should have possess a fair amount of hardiness in order to facilitate the successful outcomes at the academy as well as in careers in the future. Intensively trained especially during the first year at the academy, those cadets generally suffer from severe stresses resulting in hardiness a prominent key factor (2). Generally speaking, cadets, entering the academy approximately between 14-24 years of age, are likely to have role conflicts since adolescent's nature yawning for freedom and resisting to be under adult's strict

controls might play essential parts to disrupt their lives at the academy. The bright side is that if those cadets has successfully gone through the highly disciplined lives during all those years, they are likely to become good adults (3). Unlike normal university students required to learn common subjects such as math, science, and languages, cadets must learn not only said subjects but also physical related ones which subsequently take it tolls to most cadets. According to the statistical research conducted by the Navy's Research Department in this school, the lack of motivation and the exhaustion both from training courses and from the common courses would likely to discourage students. Living in highly disciplined spheres is also the key negative factors to fade those cadets up (4). The study regarding desirable morality of the military leaders in naval academy also finds that naval cadets have average toughness but their score lower when compared with other factors (5). From the above study, it points out that personal factors such as self-motivation and behaviors are also important to facilitate positive adaptation of their lives at the academy.

Stressed out from intense coursework and vigorous training, hardiness is believed to be positive behavior to help successful adaptation. Established by Kobasa (6), those who have hardiness should have 1. commitment; having goal oriented and self-determined 2. control; the belief in ability to control during intense situation or have an influence over occur situation and 3. challenge; the belief in changes of things would result in better outcomes and the belief in changes would bring great opportunities rather than threats (7,8). These 3 important components will be core factors of the behavior relieving their lives from stresses. There are convincing evidence stating that having high amount of hardiness will likely to result in lower level of stress and better adaptation (9-11).

Some studies report that hardiness has positive correlation with accomplishment in schools as well as in sports. Sheard and Golby (12),conducting the research on those links in the sport school, has confirmed the link. Sheard (13) also confirms that the positive link is real. Cole, Field, & Harris (14) also finds that students having hardiness are most likely to have high determination and strong motivation as well as high adaptability in classes. A study related to Rugby sportsmen who were ranked as highly valuable find 2 related factors cooperating their successes which are mental toughness and hardiness (15). In Military-related research, Maddi

(16) believes that hardiness is the ability to turn any stressful situation into opportunity to develop. It is believed that this characteristic would help military officers who are under stress turn the tide of stress into great opportunity to develop themselves. Expected characteristics are performance, leadership, conduct, and health. The study from United States Military Academy Cadets also claims that hardiness is one of the factors to predict cadets' military development grades (17). Us Amy Special Forces conducting empirical research to study academic performance and hardiness, this study also confirms that student's accomplishment is well interrelated with their hardiness (18). The study of hardiness in The Royal Norwegian Naval Academy students discovers that hardiness would eventually develop the much-preferred transformational and transactional leadership. Those two characteristics can be used to rightly predict their scores on leadership (19). There are other studies establishing convinced link between hardiness and leadership (20-22).

According to above evidence, the researcher has strong passion to discover further positive correlation between hardiness and naval cadets' performances both in term of their training and academic results. The finding would be used as a guideline to develop high calibre and appropriate behaviors in military students. It also might help determine right candidates into the military students. Conventionally, naval cadet candidates must firstly take an exam based on their common knowledge after which the performance tests will be followed. Then, they will be interviewed intensively. Desirable characteristics including verbal expression, physical gestures, as well as health are also judged accordingly. Lastly in the recruitment, candidates must undergo physical tests aimed to determine their physical abilities, agilities and their physical strength (23). To verify that the army would recruit right candidates physically and mentally, the psychological test called The Minnesota Multiphasic Personality Inventory (MMPI) is used along side with psychological interview from trained psychiatrists. There is a major flaw in this process since only candidates who are found having psychological disorders will be excluded while left the discovery of desirable characteristic out in the bush. Bartone states that screening out candidates having mental illnesses is the problem since most people in the society have no disorders and have normal personalities (17). Therefore, the recruitment process should focus on finding right personalities and characteristics as well as screening out

those who have mental problems. This way would ultimately help the organization to recruit right candidates who are well-adjusted and are capable of success in their studies.

Research Objectives

1. To study the hardiness of naval cadets.

2. To find the positive correlation between their hardiness and their naval professional training performance.

3. To determine whether naval cadets' hardiness can predict the outcome of their training performance.

Research Questions

1. If ranked, what level of hardiness do naval cadets have?
2. Is there any interrelation between hardiness and the naval professional training performance of naval cadets?
3. Can hardiness rightly predict the naval professional training performance?

Research Hypothesis

From literature review, it is believed that hardiness, according to Kobasa's notion, should consist of there functions which are commitment, control, and challenge (7,8). The research confirms that positive link between hardiness and class accomplishment (12). Generally, those who have higher hardiness are inclined to have higher motivation and higher adaptability in class (14). It is also reported positive links when compared to GPA (13) and leadership, which is a good characteristic of military personals (17-19). Generally speaking, hardiness is by far a learned characteristic which can be acquired through training and facing stressful situations. All of which can be found in any cadet curriculum (1,16,18). Subsequently, cadets should possess higher hardiness gradually as each academic year heeds. Hypothesis are as following :

1. Hardiness has positive correlation with the naval professional training performance in naval cadets.

2. Hardiness can be used to predict the outcome of the naval professional training performance.

3. Academic year has positive correlation with the naval professional training performance in naval cadets.

Scope of the Research

There are many factors involved in the naval cadet's education. This study was limited to study the relationship between the hardiness and the naval professional training performance in naval cadets ,the details are as follows:

1. Population

245 naval cadets who were studying between year 1 and year 4 as at academic year 2009 from The Royal Thai Naval Academy, Samutprakarn are selected to partake in this research. More details are shown below.

1st year	59 persons
2nd year	59 persons
3rd year	59 persons
4th year	68 persons

2. Variables in the research:

Hypothesis 1 hardiness has positive correlation with the naval professional training performance in naval cadets.

Hypothesis 2 hardiness can be used to predict the outcome of the naval professional training performance.

Hardiness is considered as a independent variable. it should comprise 3 components; commitment, control, and challenge.

The naval professional training performance, both theoretical studies and practical training , is regarded as a dependent variable.

Hypothesis 3 academic year has positive correlation with the naval professional training performance in naval cadets.

Independent variable is academic years, namely 1,2,3, and 4.

Dependent variable is hardiness and its components which are commitment, control, and challenge.

3. Tools

3.1 The Questionnaire aimed to collect personal details such as age, academic year, professional tracks, major of their study, previous institution before joining the cadet academy , GPA acquired before joining the navy cadet academy, and details regarding family backgrounds.

3.2 The hardiness test called DRS15 Tools which was developed by Paul T. Bartone.

3.3 Academic results of navy cadets.

Benefits

To know the correlation between hardiness and the naval professionals training performance. This finding will be used to either predict future academic results of cadets. Additionally, it can be used as a guideline to develop high calibre and appropriate behaviors in military students.

Definition of Terms

Hardiness is referred to those attitudes such as the belief in self-control, the belief in self determination to achieve the goal without giving up, and the belief in change of things. It is of essential for any person when faced stressful situations or threatening crisis. Kobasa (6) believes that hardiness should consist of 3 factors which are commitment, control, and challenge.

The naval professional training performance is referred to the naval professional studies and training educates the officer cadets in both theoretical studies and practical training.

The theoretical studies result is referred to results from each subjects given by teachers from each subject. The result is derived from various kinds of knowledge tests, level of discipline, determination in class, class behaviors, as well as, participation in class.

The practical training result is referred to the training performance result and the result of characteristics and moral of military personals.

The training performance result is referred to scores received by new entry training naval training during the semester , mid-year training and final-year training.

The result of characteristics and moral of military personals is referred to score from discipline scores, military appropriateness scores and physical education scores.

Dispositional Resilience Scale (DRS15) is the hardiness test developed by Paul T. Bartone in 2005. Three components are included which are commitment, control, and challenge respectively.

CHAPTER II
LITERATURE REVIEW

There are numerous research tackling hardiness and academic results of the naval cadets. This section will be categorized as follows.

2.1 Curriculums and training lessons of naval cadets

2.2 Military characteristics and adaptability of cadets

2.3 Hardiness

- 2.3.1 Theory and related research on hardiness
- 2.3.2 Hardiness and Learning achievement
- 2.3.3 Hardiness and military
- 2.3.4 Other psychological factors related to hardiness
- 2.3.5 Hardiness test

2.4 Other factors related to academic achievements of naval cadets

2.1 Curriculums and training lessons of naval cadets (1)

2.1.1 Curriculums

The Royal Thai Naval Academy offers a bachelor degree equivalent subjected to rules and regulations under the standard of military education related. It is also under the strict guidance of the Office for National Education Standards and Quality Assessment (Public Organization). Providing multi-courses, 16 week per course, 5 day per week, full 4 years in total or equivalent to 8 academic years, the prestigious academy generally start from late April to mid December each year. It provides both common knowledge and training courses in which all the first year cadets will be subjected to study all of those. Starting from the second year until the end of the program, cadets will study in specific subjects according to their choice of major courses. In total, there are 11 major subjects of their choice.

The government's recent plan to transform all public sector has enormous direct effects on the Ministry of Defense especially in size of the ministry. Due to it sized reduced, the ministry needs to adapt both in term of human resources and operations meet its optimal operation especially the recruitment process of the new personals. Those factors strongly urged the change in curriculums(24). Therefore, the length of the military curriculums has been reduced from 5 years of study to 4 years effective on 2004. The academy also reduced its admission of newly recruited cadets. Instead of studying 5 years, all cadets study for 4 years and then take course on their major of choice for 1 more year.

2.1.2 Structures of Curriculums

Curriculums used in the Royal Thai Naval Academy can be divided into 3 parts which are common knowledge, naval knowledge and training course, and preferred characteristics and morals of military officers respectively.

2.1.2.1 Common knowledge

General subjects - are those of general subjects such as mathematics, science, humanity, languages, and social science.

Specific subjects - are those of related to navy such as electronic engineering, mechanical engineering, marine engineering and hydrographical engineering , management science

Elective subjects - are those of free-of-choice selected subjects.

2.1.2.2 Naval professional studies and training

- Theoretical framework related to navy

The theoretical studies provide basic knowledge and experience in navigation, seamanship and naval operation an adequate level to pursue an advanced professional naval program after graduating from the Royal Thai Naval Academy.

- Training courses

The professional naval training provides the practical training which will take about 21 weeks through 4 years.

The naval professional training consists of:

- New entry training (3 weeks) for new cadets.

- Mid-year training in which all naval cadets studying from year 1 to year 3 are obliged to take part in 3 weeks long training session.

- Overseas training in which all naval cadets studying from year 1 to year 3 are obliged to take part in 6 week long training session.

- Officer preparatory training (3 weeks), just before the cadets graduated.

2.1.2.3 Preferred characteristics and morals of military officers

- Physical training
- Leadership enhancement program
- Moral and ethic program

All of above will be intensively included in an entire curriculum.

2.1.3 Training lesson and preferred characteristics and morals of military officers

2.1.3.1 Training lesson of navy officers

In order to train naval cadets to equip with common knowledge, experience, related skills, as well as naval and maritime related knowledge, the academy provides wide range of knowledge and training programs such as weaponry training, naval battle strategy course, communication and communication technologies course, maritime battle course, history of naval battles, naval navigation course, various kinds of engineering, as well as, rules and codes of conducts of military officers.

Naval cadets of all level are given chances to practice in actual situations which are called “Overseas training” taking place both domestically and internationally (25). In general, each session has a specific length and budget adjusted according to cadets-in-training. The overseas training requires cadets to take all their chances since they need to integrate all knowledge leaned from their classes into real practices. Before the Overseas Training, cadets must be trained in the Preparations for the Overseas Training is referred to general practices related to in-ocean naval training such as marine training, deployment of battleships, navigation of battleships,

astronomy, anchoring training as well as training related to in-land operations which are in-land station, first-aid training, and logistics. Practices in maintenance are also included.

From the public sector restructuring plan of the government, the curriculums got reduced from 5 full years to 4 years, therefore, overall hours of studying also got emitted especially, final-term training. The academy responded by improving in-class lessons to match those emitted in final-term training lessons in hoping that cadets will receive all actual in-need lessons such as battleship navigation, experiences on board, and related skills.

2.1.3.2 Leadership Enhancement Program and Moral and Ethic Program

Leadership Enhancement Program: There are some essential characteristics required to be fully capable of being commissioned officers who are well-equipped with great leadership, good manners, good ethic as well as wit and wisdom. These will prove useful when they are under duty of work under supervisors as well as when they act as supervisors themselves.

Moral and Ethic Program: This program is necessary to develop great commissioned officers possessing good morals, ethics, and good cultures. Good governance and issues regarding being good civil servants are also mentioned.

Training course and Physical Education: In order to train cadets to fully fit physically, socially, and mentally, these programs have been long integrated to the curriculums. It is believed that the benefits are increased integrity among peers, enhanced mindfulness as well as mind-control, togetherness, determination, and increased problem-solving skills.

Those mentioned above eventually deliver a much-needed characteristic which is hardiness. It is expected to shine when cadets operate in harsh situations to carry through orders as typical commissioned navy officers should operate.

2.1.4 Rules and Regulations of Considerations

A consideration on progression and graduation

Cadets entitled of progression to a higher level must follow these conditions:

2.1.4.1 Sum of grades of each subject must higher than 1.00.

2.1.4.2 GPA of all academic year must higher than 2.00 except GPA of the first year which must not lower than 1.90.

2.1.4.3 Pass 60% or above on physical education.

2.1.4.4 Pass 65% or above on training lessons.

2.1.4.5 Pass 60% on behavior and discipline points.

2.1.4.6 Acquire 60% or above on military appropriateness test.

2.2 Military characteristics and adaptability of cadets

2.2.1 Military characteristics

Military characteristics of commissioned navy officers are (26)

- Knowledge: Navy officers are required to learn and constant reassess their knowledge to develop themselves as well as deliver useful knowledge to others in need.

- Leadership: Navy officers should act valorously and like all good soldiers so. Those characteristics are self-respect, determination, responsibilities both in their works and in their lives, initiation and creativity, just, and wit.

- Honest and devotion: Cadets are strongly expected to be honest as well as devote their lives to all good deeds in the name of nation, religion, and the king.

- A gentleman: It is referred to kindness, sacrifice, calmness, and self-righteousness.

- Vigilance: it is referred to being mindful or being in conscious as well as having things analyzed carefully and thoroughly.

2.2.2 Adaptability of cadets

There is a research regarding adaptability of cadets by Kiatsiri A (27) studying cadets' lives in the dormitory of The Armed Forces Academy Preparatory School. 226 first-year cadets as at academic year 2007 were selected. It found that factors related to good adaptability of those cadets at sig=.05 are personalities, self-concepts, intra-relationship between cadets and their family members, parents' expectation on cadets' future career paths, physical conditions of the cadet academy, peer relationship, and relationship between cadets and their supervisors. It is also suggested that mental health is a negative correlating factor to adaptability in the said environment (sig =0.01). Reasons behinds the data are the assumptions that cadets, at young age, will find it hard to alter their lives to live in strict and stressful environments.

After 3 years of studying general subjects, cadets must choose the major of their choice in this instance, navy. Premvichai Y (28), conducting a study on emotional quotient (EQ) on 198 first-year naval cadets, finds that cadets have higher EQ if compared with normal population at the same age while self-control is regarded as the factor that they generally score highest. Specifically, first-year cadets have highest score on the factor when compared to all cadets partly because they have higher pressures from entering new environments. Interestingly, the research reveals that cadets have the high level of self-esteem but cadets who learn at a higher level or more, there are no more self-esteem, lowest found in third-year cadets. The researcher suggests that they should increase more self-esteem to provide more motivation. Another research conducted by Sansomros S (5) studies in the morals and ethics of military leadership of naval cadets, finds that cadets have higher morals and ethics scores when compared to the average, and also finds that navel cadets have average toughness but their score lower when compared with other factors. The researcher suggests the improvement in this factor is needed because it is considered one of the preferred characteristics of military officers.

Besides, the statistics and research department of the Royal Thai Naval Academy (4) conducts the research regarding the lack of motivation and exhaustion of naval cadets in 2008. From teachers' perspective, they regard sleeping in class as the most prominent sign of laziness (91.40%) while lack of attention in class follows with

53.76%. They comment that lacks of motivation to pursue goals, fed up with routine manners, and tiresome from training are reasons distorting their students. On another hand, cadets point out that exhaustion from training and homework, extremely strict disciplines, and truckloads of workloads are distorting factors contributing in laziness among them. The findings are in line with that of Siwapinyoyos S (11) who studies stress and its risk factors of police cadets. The research suggests that overwhelmingly strict discipline in the cadet academy depletes their wills to pursue their education.

All of the research related to the matter suggests that cadets have high self-control but the strict discipline distracts them. In order to become a good officer, a cadet must go through many hard works and training and must train oneself in harsh and highly disciplined conditions.

2.3. Hardiness

2.3.1 Theory and related research on hardiness

There are numerous evidence pointing that some types of people are likely to manage to go through stress smoother than others. Hardiness is perceived as one of which factors preventing negative factors related to stress (9,19,29).

Kobasa is one of the first psychologists to go into hardiness. In 1979, she studied what so-called preventive behaviors of which help maintain good health. Conducted the research at Bell Telephone Company, she found that hardiness is the prominent factor preventing her subjects from negative consequences of stress. There are three components related to hardiness are commitment, control, and challenge. details of each component are as follows (7,8,30-33).

Commitment is referred to the belief in potentials and abilities of oneself, determination, and willingness to do given tasks. It also means any action to figure puzzles and problems in term of family, social, as well as personal issues.

Generally, people have different levels of commitment. Some tend to avoid stressful events altogether while some are likely to tackle the problems trying to turn the tide. There are research stating that personal commitment to the organization

to the positive factor to improve commitment while working hence improve the organization at large (34,35).

Control is the tendency of people whether they are likely to express or control themselves under specific situations. It may refer to the ability to control the situation under their commands. Persons having high control tend not to blame on the others or fate when everything turns out against their ways. They also tend to have high determination and tend to believe in their potentials to face harsh situations.

Challenge can be regarded as the idea that everything around us is not static and is subjected to change periodically. Those who believe in change tend to believe that change will bring their new opportunities rather than threats. Abilities to improve oneself from experiences as well as learning hearts are the most obvious factors leading to challenge.

Persons who believe in challenge tend to learn new things all their lives since they believe in progression of all things. They believe that they can learn from both mistakes and successes.

Kobasa, Maddi, and Pucett (36) assert that any person with hardiness is the person who have curiosity, tend to believe that their experience is challenging as well as interesting rather than boring. They also believe in themselves, alter environments and fetch opportunities to make things better. Therefore, this kind of people tend to be optimistic people by nature since they understand wholeheartedly the nature of things when faced harsh situations. They also believe that experiences they perceived whether good or bad will eventually be good for them in the future. Ultimately, people who have hardiness are likely to simplify stress reactions when they encounter stressful events.

On contrary, people who have low hardiness tend to believe that environments around them are boring or valueless or even threatening. They have less willpowers than the former to tackle problems and they are likely to succumb to rough situations rather than fight to turn things otherwise. Ultimately, they tend to be optimistic by nature since they believe that they can not control, change or even challenge the situations they face. All of which leads to more stressful life, hence, bad health. Kobasa et al. (38) underline the positive link between hardiness and stressor or strain in their initiate finding.

Following studies aim to confirm the positive correlation between hardiness and stress. Numerous domestic and international research reaffirm the link that people who have high hardiness are likely to have less stress than those who have low hardiness (39-42). The positive link can also be found with adaptive coping whereas having negative relation with maladaptive coping (43). Those who have high hardiness tend to have approach coping skills rather than avoidance coping skills (44). Cognitively, hardiness is the factor to eliminate negative consequences when people are under harsh situations (45-48). Hardiness is also found as a protective factor in some stressful professions. There are research showing that nurses are likely to have less stress hence reduce professional burnout (49-51). Teachers, one of the most stressful jobs, also have positive benefits of having high hardiness. Woottiluk P (33) reports the correlation between everyday life hassles and hardiness of the lectures in the university finding that those 2 factors are negatively interrelated at 0.001. Furthermore, there are evidence stating that any organization having high hardiness will likely to reduce the employment's turnover which subsequently benefits the organization in return (52,53).

Learning process and the development of hardiness

Factors related to the development of hardiness

Kobasa and Maddi (32,33) explore any factors contributing to increased hardiness. They find that early positive experience in life especially parent-child relationship, supportive upbringing and affirmation play important parts in developing commitment, control, and challenge.

The development of commitment may start early in life in children are raised in safety environments and their basic needs are met. They also need sense of belongings as well as sense of supports from parents in achieve their goals.

Control may be originated by imposing disciplines on children while encouraging them to take responsibility on given tasks which should be adjusted appropriately according to each child's skills and abilities. Then, children should be encouraged to perform the give tasks by themselves as much as possible. The sense of achievement by themselves will be printed, therefore, the sense of control will later develop.

Challenge is referred to the ability to turn environments to become more challenging. Firstly, parents, who are most likely to be their children's role models, should be told that changes are likely to happen and it's good to change. Children will imitate those positive ideas regarding change and challenge.

Hardiness can also be learned through education. Maddi (16) recognizes hardiness as one of useful perceived characteristics. Children, who receive ample supports from their parents when encountered stress for first times of their lives, are mostly better off later with high hardiness. Hardiness can also be learn in schools by having supportive teachers around children. Maddi and Khoshaba created the program to develop hardy coping, socially supportive interactions, and self-care exercise. It is supposed to be 2-3 week long program. The results found that participant had increased their hardiness as well as improved their complacency both in work and study. Furthermore, the research from Nursing Administration Program also finds that nurses taking part in the program increase their hardiness (54).

Research related to military also echoes the link. Bartone conducting the hardiness, combat stress and PTSD relationship research in 2000 finds that soldiers had improved their hardiness during the engagement in the Gulf War. The conclusion is that when soldiers encounter stressful events, they tend to increase their levels of hardiness (21). The finding leads to assumption that naval cadets need to undergo hard and harsh training in order to improve their level of hardiness.

2.3.2 Hardiness and Learning achievement

Learning achievement is one of the useful indicators to rightly predict the results of overall performances. It can also be used to measure the quality of the whole educational processes. Factors related to learning achievement are divided into 2 parts intelligence-related factors and non-intelligence-related factors. The latter is also important since students ranging in the same IQ rank could have different grade point average (55). Intellectual functioning can be derived from many sources as follows.

Biological factor: for instance genes, brain development, and hormones.

Psychological factor: such as general factor (g factor), cognitive skills, adaptive skills, beliefs, anxiety, expectation, and motivation.

Environmental factor: such as environment in support of learning, cultures, status and roles, gender and sexuality and IQ test (56).

Links of hardiness and learning achievement is widely witnessed. Factors related to this link are internal factors such as IQ, personality, motivation and external factors such as environment, society, family, and school (57-61). Not only is IQ the prominent factor in learning processes, other factors such as motivation and stress management skills also play important roles to assist education of the subjects.

Hardiness is well-linked with learning achievement. Sheard and Golby (12) focused their research into finding the link between commitment, one of the 3 components of hardiness, and academic and physical education results. Personal Views Survey III-R is the main measurement tool assigned to 134 university students from the sport university located at the urbanized northeastern province of the Great Britain. The finding suggests overall hardiness is connected with learning achievement. In 2009, Sheard also found similar conclusion (13) when he conducted research on learning achievement and its positive relating factors which are commitment, gender, age, and academic performance. In the same manner, Cole, Field, and Harris instead use 18 item School-Related Hardiness Measure of which was the developed version of Kobasa's outdated 45 item hardiness test. The result shows that students who have hardiness are likely to have commitment, control over their personal lives, enjoyment while study, positive perspectives, less talks on psychosomatic, motivation to learn new things (14). This finding is echoed by the research of Hystad et al. In their research, 214 university students were randomly selected then assigned to the hardiness test called Dispositional Resilience Scale (DRS-15). The result shows that high commitment can predict student's adaptability in university environments (62). Additionally, it is found that after undergone Nursing Administration Program, participating nurses have higher hardiness. Bartone's The Hardiness Scale, 30 item questionnaire, was used to measure. This research suggests the inclusion of hardiness in the nursing program at large to improve the ability of trained nurses (54).

In sport fields, Golby and Sheard in 2003 conducted the research in 115 rugby sportmen who participated in Great Britain's International Super League and Division one. The hardiness test called Personal Views Survey III-R was used. They

found out that international players have scored higher in hardiness. The another research compared Australian and British rugby players and found out that Australian counterparts, the winners of the tournament, had higher points in challenge (63). Additionally, there is a research conducting in marathon men in Spain. It was found out that most of them have score higher significantly in all 3 components of hardiness (64).

In sum, it can be rightly stated that hardiness is one of the factors to motivate persons to achieve their goals. Therefore, hardiness is the factor to predict academic outcomes of the navy cadets contributing to their commitment, control, and challenge of any harsh situations.

2.3.3 Hardiness and military

2.3.3.1 Hardiness and military related stress

Generally, training system in military is extremely stressful since persons in training are required to be under strict disciplines and have to be trained under extreme situation physically and mentally. Hardiness is regarded as a protective factor resisting military related stress and burnouts. It is no surprises that most mental-military research involve the mentioned issues. Some interesting ones are as follows.

There is a longitudinal study conducted in Parris Island, South Carolina, USA which was involved 1,571 Marine recruits who participated in a highly stressful training program. 15 item hardiness test developed by Bartone was used in pre-test and post-test basis. The first test was conducted on the fifth day of training while the second test was given to those who successfully passed all training. Results are that male who are hardier at first test reported lower stress reactions at second test, and male who experience more stress reactions at first time were less hardy at second time. Although the negative impact of stress reactions on hardiness is strongest when social support is low for both genders, stress reactions predicted enhanced hardiness when social support is high for female only (65). It can be concluded that response to stress is associated with hardiness.

Bartone (66) studied the hardiness as the protective factors against combat stress among Army reserve personnel mobilized for the Persian Gulf

War. Used Bartone's 15-item hardiness test on 787 officers, regression results showed hardiness interacted with both combat related stress and stressful life events to predict psychiatric symptoms. US Army Soldiers (67) also echoed the above finding in the research as they collected personal data, scores on stress and general health, and adaptive factor both before and after the combat of 103 army officers who were assigned to patrol now-defunct Yugosalavia's boarders. It is stated that hardiness is related to stress level of the officer prior to the combat and hardiness can rightly predict depression.

2.3.3.2 Hardiness and the development of military characteristics

Not only is hardiness related to combat stress, it is also correlated with the development of military characteristics. Bartone (17) used his 15-item hardiness test to study the link between hardiness and leadership of 435 United States Military Academy cadets , who were between year1-year4 starting from 1994 to 1998. It is found that hardiness is the reasonable predictor of the military development grades which is judged by military performance of each semester. Furthermore, Bartone and Snook (20) also studied gender differences as the predictor of the leadership among male and female officer cadets. It shows that hardiness, transformational leadership style, self-assurance, and agreeableness are useful predictors of leadership among female cadets. Same patterns can be applied to male counterparts as hardiness, transformational leadership, extraversion, traditional value, and social judgment skills are predictors the leadership. In sum, hardiness acts as the predictor of leadership in both male and female cadets, hence, cadets who have high hardiness will likely posses leadership characteristics. Opinions from both trainers and peers also resonate the finding since they believe that hardiness is one of the important factors of the good leaders (21).

In 2009, Bartone, Eid, Johnsen, Laberg, and Snook (22) examined Big Five personality factors, hardiness, and social judgment in order to predict leadership in United States Military Academy cadets at West Point. 296 cadets were selected and assigned to 15-item hardiness test. The score, then are compared with supervisor's opinion regarding students' leadership during training. After controlling for general intellectual abilities, the research found out that leadership

shining in the summer field training environment is predicted by Extraversion, and Hardiness, and a trend for Social Judgment. During the academic period context, leader performance is predicted by mental abilities, Conscientiousness, and Hardiness, with a trend for Social Judgment. These findings will benefit the future program development to foster very much needed criteria.

Eid, Johnsen, Bartone, and Nissestad (19) studied the roles of hardiness as a characteristic in leadership development of transformation leaders in Norwegian Navy cadets. Total 66 students were placed under extremely stressful situations and then measured by Dispositional Resilience Scale (DRS-15). It indicated that hardiness is well-connected with transformation leader type while hardly related with passive-avoidance leadership. Hardiness can also predict the increase of transformation leadership both in short and long terms during trainings. Theoretically, transformation leadership was established by Kuhnert and Lewis as the proper characteristic to encourage people to create or initiate new things as well as new problem solving methods, hence, the improvement of the organization would surely follow (68).

Bartone, Roland, Picano, and Williams (18) have conducted the research on hardiness as the predictor of academic achievement of 1,138 cadets enrolling in US Army Special Forces. Using Bartone's DRS-30, they found that academic achievement of cadets is statistically related with their hardiness. The latter helps improving stress resistance while working.

According to all literature and research, it precisely implies that hardiness is positively correlated with preferred characteristic development of cadets. Hardiness is one of the factors helping cadets to go through hard trainings and highly discipline situations as well as improving their leadership and other preferred factors.

2.3.4 Other psychological factors related to hardiness

Resilience is the characteristic that helps a person to sustain hardship and stressful condition while enhance a ability to cope up or adapt positively (69). There are many studies of resilience in people who are facing severe stress and found that the resilience is valuable for abused children or other victims helping them go through

their harsh experience and live their lives smoothly (70,71). Hardiness is also found in persons who strongly have their personal goals and have their determination to control things around them. The resilience has several components, hardiness is one of all components can induce the development of resilience and vice versa (21, 72, 73) and hardiness measurement used to measure resilience too(74).

Self-efficacy established by Bandura is the ability of any person to believe in abilities of oneself to cope with problems(75). Similarly, Rotter's internal locus of control indicates that any person who have abilities to internally control oneself is likely to comprehend bewildered conditions or actions. They are also likely to admit mistakes occurred (76). It is similar to the control component of hardiness.

Additionally, positive psychology also believes that the personality characteristic reassembled to hardiness is related to achievement at work. The said characteristic, raised by Luthans, comprises 4 factors which are efficacy/confidence, hope, optimism, and resiliency. They are sums of positive characteristics which are unique and measurable as well as developable and impactful on performance These positive characteristics has been used in organizational development (77,78).

Other personalities related to hardiness are also mentioned. Maddi et al. (30) compared the Personal View Survey II with the Million Clinical Multiaxial Inventory III (MCMI III). They found out that overall score on related to hardiness including commitment and control is negatively related to the tendency of passive-aggressive, depressive, avoidant, self-defeating, schizoid, dependent, antisocial, and aggressive. On contrary, positive correlation is found on histrionic and narcissistic personality types. Furthermore, they discovered that hardiness and mentioned 3 factors are negatively correlated with clinical syndromes of alcohol dependence, dysthymic disorder, posttraumatic stress disorder, anxiety disorder, somatoform disorder, and drug dependence. Interestingly, no correlation was found on bipolar disorder. The findings was resonated later by Sinha and Sign who studied the role of hardiness and depressive disorder in 320 normal persons aged 21-65 years old. Used Hindi-translated version of Kobasa's test, the research indicates that hardiness is negatively related with depression while it acts as the protective factor from any threats to come (79).

In conclusion, hardiness is well connected with positive personalities helping any person to cope up with stressful conditions.

2.3.5 Hardiness test

After hardiness had become well-known among scholars, in 1987 Funk and Houston concluded that the weakest point of hardiness is that it is hard to measure statistically. The prior tests were similar to tests on neuroticism and used to many negative questions (38). Mostly, critic points related to hardiness are its measurement leading to the improvement of the hardiness test as follows.

In 1979, Kobasa (6) studied preventive factors during illnesses. She divided his subjects into 2 groups; severely stressed while suffering moderate illnesses and severely stressed while suffering less illnesses. The test used in the research are as follows.

Control component can be measured by 4 different measurement tools which are the Internal vs. External Locus of Control scale developed by Rotter et al., the powerlessness vs. personal control and nihilism vs. meaningfulness scales of the Alienation test developed by Maddi et al., the achievement and dominance scales of the Personality Research Form developed by Jackson and the leadership orientation scales of California Life Goal Evaluation Schedules developed by Hahn.

Commitment component can be measured by the Alienation test's scale on alienation from vs. commitment to work, social institutions, interpersonal relationships, family, and self, and the role consistency scale is also used of which was revised version of The Gergen and Morse Self-Consistency test intended to measure compatibility among the subject's self-reported five most important life roles.

Challenge component can be measured by Hahn's the preference for interesting experiences and the security orientation scales of the Hahn instrument. The vegetativeness vs. vigorousness and adventurousness vs. responsibility scales of the Alienation test, and the need for cognitive structure and need for endurance scales of the Personality Research Form is also seen as a suitable test.

Hardiness tests had long been revised. During the second revision, the test had been reduced from 71 item scale to 36 item scale but all of items were negative questions. To counter the negative feedback, other positive and negative questions

were added later to conclude the scale comprising 50 items (80). In the third revision, the test was given a new name which was The Personal View Survey III-R (PVS III-R) developed by Maddi and Khoshaba (81), this measure consisting of 18 items with high reliability and validity. Items were divided equally to match 3 factors of hardiness while balancing out positive and negative questions.

Dispositional Resilience Tools by Bartone

Bartone et al. (82) tried to establish the hardiness test called Dispositional Resilience Tools in 1982. Public transport drivers in Chicago were selected in the study to measure their stress. The test itself was adjusted to match blue collar workers. Additionally, it was also reviewed regarding item frequency and item scale correlation by 190 lower-level managers working at a large of Illinois utility, item frequencies and item-scale correlations were examined. The final tool comprised 10 items regarding security, 8 items on alienation from work, 7 alienation from self and 10 items on powerlessness as well as other 20 revised items from Nowicki and Stricklnad's locus of control scale. Later in the process, a research group at the Chicago University added other 21 new items into the test. When the data on 787 bus drivers became completely , this totaled 76 items hardiness scale and the final test was reduced to 50 items by using item scale correlation procedures. This tool comprised 20 items of commitment, 20 items of control and 10 items of challenge.

Until 1989 was the hardiness test to measure military officers. The test got reduced to 45 items, 15 items each factor, positive and negative questions balanced out by item scale correlation, reliability analysis and factor analysis(83). Later in 1991, the test had a further reduction to total 30 items, 10 items each factor which was given the name as DRS-30.

In 1995, Bartone (84) revised the same test to match specific conditions of military officers as the test got cut to 15 items comprising 3 factors of hardiness which are commitment, control, and challenge. It was used to measure 600 supportive army units in the Gulf War. The findings shows Cronbach's alpha coefficient of overall test at .83, commitment at .77, control at .71, and challenge at .70. Internal consistency coefficients and validity were confirmed. It is stated that DRS-15 can rightly predict mental illnesses and health problems in supportive army units in Gulf War in both

male and female. It was tested in army medical workers in Croatia and the results were confirmed. Bartone (85) also studied test-retest reliability in DRS-15 in first-year cadets of U.S. Military Academy, West Point. Of 104 people, 86.5% were male and 13.5% were female, average aged at 18.9 years old. It was found out the correlation coefficients of the test was .75, commitment at .75, control at .58, and challenge at 0.81 which were regarded as high reliable results except the result of control.

2.4 Other related factors related to academic achievement of cadets

2.4.1 Other related factors related to academic achievement

Dulayapiradit A(57) conducted research on adversity, academic self-efficacy, and study habits of university students with different level of academic achivement. It concluded that students who got distinction and high distinction were likely to have more academic achievement meaning that they were highly motivated to pursue their educational goals. Additionally, those students were the self-believers indicating that they believe in their potentials and capabilities to do things. Puttaruxsa L(56) echoed the above findings in her research regarding self-concept and academic achievement of nurse students in colleges located around Bangkok metropolitan area. It found that self-concepts in competence, affect, academic and total self-concept were positively correlated with academic achievement at .05 significance. Sritongpim S (59) also resonated the finding that self-concept in academic factor was positively correlated with academic achievement at .01 significance while self-concept in emotional factor was also correlate with academic achievement at .05 achievement. Moreover, Wanaintrayuth W (60) aiming to establish the intelligence quotient, emotional quotient , and morale quotient improvement models found out that these quotients can be used in combination to predict the volatility of academic achievement at the rate of success 56%.

Moreover, Oopakaew A (55) conducted the comparative study to predict academic achievement at undergraduate levels. Crossed out intelligence quotient as a related factor, she rather used previous high-school academic results of students. It

revealed that attitude toward the university, motivation, participation in university's activities, and gender are the promising factors to be able to predict students' current academic results at .05 significance. The previous results during high school years is also be able to predict the university's academic results. Boonshuyar P (86) found out exactly the same that previous academic results, attitude toward current curriculums, and attitude toward peers are able to predict their current university level results.

There is a research conducted by Nuyai S (61) regarding relationship in family and academic achievements of Bangkok based public university students. It found out that familial factors such as intimacy, togetherness, interrogation in family are able to predict academic achievement.

2.4.2 Other factors related to military characteristics of cadets

2.4.2.1 Other factors related to leadership in cadets

Leadership is well regarded as one of the important factors for military officers. Panlainark P (87) studied the relationship between leadership of cadets and academic achievement and found out that leadership is vital in future careers of the cadets. School related factors such as traditions in cadet school, atmospheres in the school, and atmospheres in class are positively related to leadership of the cadets. Factors that can predict the characteristic are traditions in cadet school and atmospheres in class at prediction level of 17.5%. Furthermore, Klaykleung P (88) examined 4 aspects , namely : responsibility, human relations, dicision-making competencies, and creative thinking; compare the military leader attributes as a whole and each of its aspect according to service, class, and student leader position. Of 333 various cadets studying in 2007, it is found that the comparisons of the military leader attributes of pre-cadets by the service, class, and student leader position variables found no significant difference. Chan-In S (89) who studied the effect of transactional analysis training on leadership of first year naval cadets also revealed that all cadets have no differences in their prior leadership given the fact that they scored 15-25% in leadership. After the training focused on the improvement of leadership skills, the said characteristic was substantially improved.

2.4.2.2 Other factors related to the development of moral in cadets

Moral is also regarded as a crucial characteristic of military officers, hence, it is needed to be fostered. Nimmanee M (90) studied perception of cadets regarding the development of moral in 348 second year cadets. The research indicated that most cadets scored reasonably high on moral test, honesty, discipline, togetherness, generosity, and gratefulness are all at high level. In minor research conducted by age differentiation, it indicated that there was no difference in discipline, togetherness, and generosity while honesty and gratefulness were found to be different at .05 significance. Cadets who had different GPA before entering the school were found to score differently on discipline, generosity, kindness, and togetherness at significance level of .05. In sum, it can be said that age and age prior to entry are related to moral development in cadets.

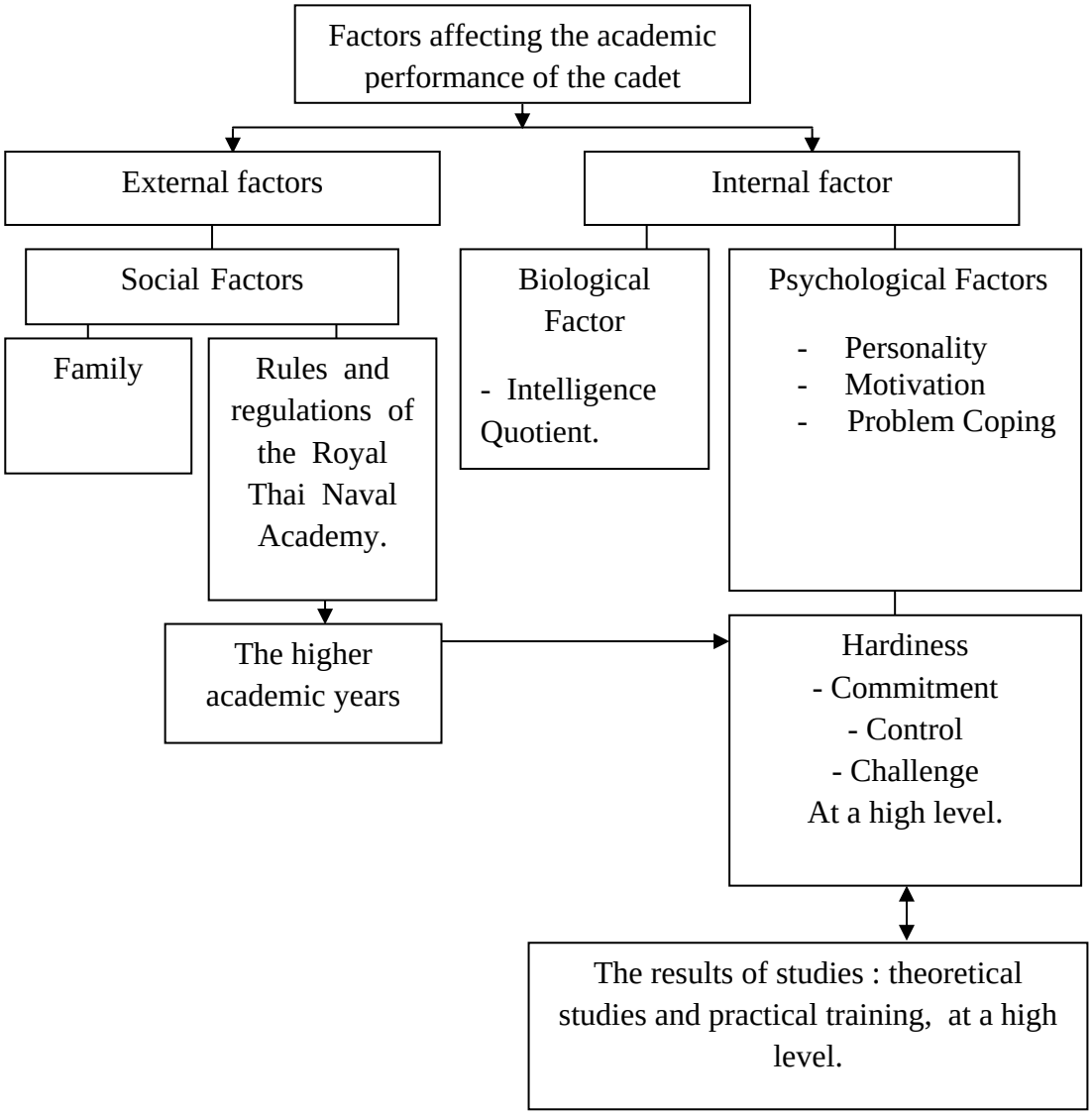
Additionally, the method of bringing up those cadets were regarded as a important factor to foster model development in police cadets suggesting that democratic fostering was the best way to develop moral (91). In naval cadets, it is found that there was no differences between gender, academic years, professional tracks, major subjects and average age when compared their moral level at .05 significance. It is believed that family backgrounds was significant in this finding at .05 (5).

In conclusion, it can be rightly stated that there are many factors contributing to academic results and moral development of cadets. Most likely personal related factors and environmental factors are on top then followed by family related factors. Interestingly, school related factors such as training, discipline, and curriculum are not important since cadets perceive them differently prior to their previous backgrounds and experience. Therefore, the most important factors to nurture them are positive thinking, personal control, and problem solving skills of which are closely related to hardiness.

2.5 Conceptual Framework

According to literature, it is believed that there are substantial differences between normal schools and cadet schools. The latter is focused on both common knowledge and intensive training. There are also unique factors such as military social interaction, army related environment, and high discipline. To counter the hardship, useful internal factors such as biological factors like IQ, psychological factors such as motivation, characteristics, problem solving skills, as well as, Kobasa's hardiness which are consisting of commitment, control, and challenge (7,8,30,31). It is regarded as a positive factor improving personal judgment in harsh conditions, helping oneself to solve problem rationally and appropriately, hence, improving the rate of success in education(13,14,54,62). Militarily, hardiness is also regarded as a much-needed characteristic which helps cadets-in-training to disperse their stress while enchanting their motivation and their leadership (17-19,20-22). Hardiness is hard to foster but it is a learnable traits meaning that it can be foster through learning processes both during their childhood and during their education (16). There are some evidence stating that undergoing harsh training can improve hardiness (21). Therefore, naval cadets have to undergo harsh and stressful trainings to foster the said traits. This research aims to study the correlation between hardiness and training results of the selected naval cadets based on the assumption that 1. high hardiness will improve academic achievement of the cadets 2. Cadets in higher academic years will most likely to posses high hardiness**.**

Research Conceptual Framework



CHAPTER III
METHODOLOGY

This descriptive research conducted to find the correlation between hardiness and naval professional training performance of naval cadets. The relationship between academic years and improvement of hardiness is also expected. Methodologies used in this research are described as follows:

3.1 Population

Population in this research is 245 navy cadets studying between years 1- 4 of The Royal Thai Naval Academy, Sumutprakarn as of academic year 2009.

1st year	59 persons
2nd year	59 persons
3rd year	59 persons
4th year	68 persons

3.2 Research Instruments

There are 3 tools used in this study :

3.2.1: The Questionnaire aimed to collect personal details such as age, academic year, professional tracks, major subjects, previous institution before joining the Royal Thai Navy Academy, GPA acquired before joining the Royal Thai Naval Academy, and details regarding family backgrounds.

3.2.2: The hardiness test called Dispositional Resilience Scale (DRS15) which was developed by Paul T. Bartone. It is appropriate to use in this research because of its high internal consistency and validity. (80,82). The research conducted in first year cadets of U.S. Military Academy, West Point found overall reliability coefficient at .78. commitment = .75, control= .58, and challenge = .81 if analyzed down into each part. (82). Another research in 403 forth year cadets of U.S. Military Academy, West Point also found cronbach's alpha coefficient is at .70 (22). Since there is no Thai-version available, the DRS15 was translated by the researcher, under the permission from Bartone.

Characteristics of Bartone's DRS15

Consisted of 15 items, DRS15 is divided into 3 parts as follows.

Commitment – consisted of 5 items, 4 positive (item 1,7,10,12) and 1 negative (item 4)

Control – comprised 5 items, all items are positive. (item 2,6,8,9,15)

Challenge – comprised 5 items, 2 items are positive (item 5 and 13) while item 3, 11, and 14 are treated as negative ones.

Scoring and interpretation

There are 4 levels which are ranged from completely true to not at all true.

Items	Score	
	Positive item	Negative items
Not at all true	0	3
A little true	1	2
Quite true	2	1
Completely true	3	0

Then, over scores are ranged from 0-45 scores which are divided into 3 parts. The average score of the test will be used to interpret. Those who

score highest on average are of high hardiness, vice versa for those who score lowest. (64)

Consistency of the tool

This Thai translated version of hardiness test had been proofed by the revered linguist. Then, it was screened by three revered psychologists. (a list of mentioned persons can be found in appendix A.) The reliability test were the last step in this process. It was used in the pilot test in thirty first year navy cadets, as of 2009. After underwent Cronbach's alpha coefficient, it was found that overall alpha is at .82, commitment is at .72, control is at .70, and challenge is at. .73 respectively.

3.2.3 : Academic results: The naval professional training performance of naval cadets

Curriculums used in the Royal Thai Navy Academy can be divided into 2 parts which are the theoretical studies results, naval knowledge and training course, and preferred characteristics and morals of military officers respectively.

3.2.3.1 The theoretical studies results from assessment and evaluation following :

- During the semester : teachers in each subjects evaluate by the method that it deem appropriate in measurement principles.

- End of semester : evaluate all examinations, individual scores and conducted by the committee of knowledge examination who appointed by the Royal Thai Navy.

- Evaluation show scores in the letter. Using the letter grade as follows:

Symbols	Score per unit	Meaning
A	4.0	Excellence
B+, B	3.5 , 3.0	Good
C+, C	2.5 , 2.0	Acceptable
D+, D	1.5 , 1.0	Pass
F	0.0	Fail

P - pass non-graded subjects

N - fail non-graded subjects

- The calculation of average score : it is calculated by multiplying score per unit of each subject and then dividing the sum of score per unit of all taken subjects. Three decimal nominal are all counted without emitting remaining factures. This research is study average score in academic year 2009.

3.2.3.2 The practical training results are include training results and scores from characteristics and moral of military personals

1) Training results are collected from

- New entry training for new cadets.
- Naval Training during the semester.
- Mid-year training.
- Final-year training.

The scoring of training results are calculated all of above scores in the ratio 1:1:2:3 and calculated into percentage.

2) Scores from characteristics and moral of military personals

Discipline scores – each naval cadet is given 200 scores at the start of every academic year. Another 100 sores is later issued to those who have never broken the rule and regulation at the end of academic year.

Military appropriateness scores – each navel cadet is given a chance to award score to other cadets. Advisors are also given this chance. Total 100 scores are given.

Physical education scores – Of total 100 scores, it is given by PE teachers.

All of scores from the characteristics and moral of military personals are calculated into percentage.

3.3 Data Collection

3.3.1. Raw data were collected at the Royal Thai Naval Academy, Samutprakarn. Questionnaires were issued to selected subjects who were grouped according to pre-assigned class. Personal data and hardiness were collected in July 2009. The researcher and researcher's assistants, who were briefed about method of data collection, then proceeded to collect all required data. Regarding research privacy, participants were asked to fill in their student's number on the front page of each set of questionnaires, then it was issued new numeric order which was designed by the researcher. The front pages, on which student's numbers were written , were subjected to be destroyed at the test site.

3.3.2. In order to collect academic results of the selected participants, the researcher was granted special permission to access the academic results during the data collection period.

3.3.3. Validation of data as well as scoring method.

3.4 Statistical analysis of the information

This research analyzed the data using the Statistic Package for Social Science (SPSS) computer program. It will be used to analyze the following.

3.4.1. Personal data: interval and descriptive analysis such as percentage, mean score, and standard deviation.

3.4.2. Hardiness: hardiness of navel cadets will be analyzed. Data such as interval statistic, ratio and percentage, mean score, S.D. and the F-test.

3.4.3 Correlation between hardiness and its three components: This is mainly due to the research assumption that hardiness is positively related with the naval professional training performance of navy cadets. Firstly, the Pearson Product Moment Correlation Coefficient and Stepwise Multiple Regression Analysis are the two main focal points. Then, internal consistency of each component is also analyzed

CHAPTER IV
RESULTS

According to the study of hardiness and naval professional training performance of The Royal Thai Naval Academy's students, the group of naval cadets studying between year 1-4 of are selected The Royal Thai Naval Academy, Samutprakarn as of academic year 2009, as the population group. Data was collected from 216 students from a total of 245 students as respondents who have participated, representing 88.16 percent. There are three parts of instruments used in this study, namely: (1) Personal Data of Naval Cadets (2) Dispositional Resilience Scale (DRS15) developed by Paul T. Bartone, Thai version (3) The Annual Naval Professional Training Performance of Naval Cadets. The research results are divided and separately presented into three parts as following:

Part 1 Personal Data of Naval Cadets

Part 2 The Naval Professional Training Performance and Hardiness in Naval Cadets

Part 3 The relationship between the hardiness and naval professional training performance and the predictive of their training performance with Stepwise Multiple Regression Analysis.

Part 1 : Personal Data of Naval Cadets

Table 1: Personal Data

Personal Characteristics	N	%
Academic Years		
1st year	50	23.1
2nd year	56	25.9
3rd year	54	25.0
4th year	56	25.9

Table 1: Personal Data (Continued)

Personal Characteristics	N	%
Ages (Years)		
19	10	4.6
20	36	16.7
21	63	29.2
22	42	19.4
23	36	16.7
24	26	12.0
25	3	1.4
Professional Tracks		
General (Navigation)	156	72.2
Engineering	58	26.9
Marine Corps	2	0.9
Major Subjects		
Electrical Engineering (Electronics)	151	69.9
Hydrographical Engineering	5	2.3
Marine Engineering	56	25.9
Management Sciences	4	1.9
The Previous Institution Before Joining The Royal Thai Navy Academy		
The Naval Rating School	12	5.6
The Armed Forces Academy Preparatory School	204	94.4

Table 1: Personal Data (Continued)

Personal Characteristics	N	%
GPA Acquired Before Joining The Royal Thai Naval Academy		
2.00-2.49	14	6.5
2.50-2.99	60	27.8
3.00-3.49	100	46.3
3.50-4.00	42	19.4
Marital Status of Parents		
Parent live together	190	88.0
Divorce	9	4.2
Father died	11	5.1
Mother died	5	2.3
Others	1	0.5
Currently, Naval Cadets Live With		
Parent	183	84.7
Father	5	2.3
Mother	21	9.7
Others	7	3.2

From Table 1, the result is showed that number of naval cadets in each year are not much different (between 23.1% and 25.9%) in ages between 19-25 years old. Meanwhile, 21-years old of navy cadets are represented as the largest group with 29.2%. In term of Profession Track, most of populations are studying in General (Navigation) as a result of 72.2% and followed by 26.9% studying in Engineering. Electrical Engineering (Electronics) is demonstrated as the most popular majoring subjects of navy cadets and followed by Marine Engineering with results of 69.9% and 25.9% respectively. In term of previous institution, 94.4% is showed that almost of

naval cadets graduated from the Armed Forces Academy Preparatory School and about half (46.3%) of them had the GPA from the previous institution before joining the Royal Thai Navy Academy between 3.00 to 3.49. Regarding to family status, most of their parents live together (88%) and most students also lives with their parents (84.7%).

Part 2 : The Naval Professional Training Performance and Hardiness of Naval Cadets

Table 2: Mean and Standard Deviation of the Naval Professional Training Performance (N=216)

The Naval Professional Training Performance	Mean	S.D.
The Theoretical Studies Results		
Grade Point Average of academic year 2009	2.74	0.51
The Practical Training Results		
Training results (percentage)	83.29	4.11
Scores from characteristics and moral of military personals (percentage)		
Discipline scores	97.33	5.43
Military appropriateness scores	84.91	4.88
Physical education scores	80.01	7.78
Grade Point Average of The Practical Training	3.71	0.24
Total Grade Point Average	3.14	0.32

From Table 2, the results are showed that total average GPA of The naval professional training performance is equal to 3.14, which is composed of 2 main parts: 1) The theoretical studies results; an average GPA of academic year 2009 is 2.74 and 2) The practical training results; an average GPA of the practical training is 3.71. For the practical training result are divided into 3 parts, which are discipline scores, military appropriateness scores and physical education scores as results of 97.33%, 84.91% and 80.01% respectively.

Table 3: Mean and Standard Deviation of Hardiness of Naval Cadets (N=216)

Variable	Mean	S.D.
Hardiness	**26.54**	**4.68**
Commitment	9.17	2.01
Control	9.76	2.32
Challenge	7.60	2.26

From Table 3, the results are showed that the average score of hardiness in naval cadets is equal to 26.54; comprising of 9.17 points for commitment, 9.76 points for control and 7.60 points for challenge.

Table 4: Mean and Standard Deviation of Hardiness of Naval Cadets Categorized by Academic Years (N=216)

Academic years	Variables								p-value[a]
	Hardiness		Commitment		Control		Challenge		
	M	SD	M	SD	M	SD	M	SD	
1st year (N=50)	26.74	4.46	9.08	2.02	10.02	2.21	7.64	1.88	.535
2nd year (N=56)	26.17	5.58	8.98	2.23	9.19	2.61	8.00	2.35	
3rd year (N=54)	27.24	4.84	9.35	1.89	10.16	1.93	7.72	2.51	
4th year (N=56)	26.07	3.63	9.28	1.91	9.73	2.41	7.05	2.21	

[a] p-value of F-test

From Table 4, the results are showed that the naval cadets in each academic year had no statistically different in term of hardiness. Based on detail, found that students in years 3 had the highest hardiness scores of 27.24 points, while students in the second and the forth years had hardiness scores slightly lower than average and the fourth years student had the lowest hardiness.

Table 5: Mean and Standard Deviation of Hardiness of Naval Cadets Categorized by Professional Tracks (N=216)

Professional tracks	Variables								p-value[a]
	Hardiness		Commitment		Control		Challenge		
	M	SD	M	SD	M	SD	M	SD	
General(Navigation) (N=156)	26.58	4.66	9.25	2.04	9.85	2.23	7.47	2.24	.983
Engineering (N=58)	26.44	4.83	8.93	1.92	9.51	2.60	8.00	2.32	
Marine Corps(N=2)	26.50	.70	10.50	2.12	10.0	0	6.00	1.41	

[a] p-value of F-test

From Table 5, the results are showed that naval cadets in each professional track had no statistically different hardiness. Based on detail, found that Engineering and Marine Corps students had hardiness scores slightly lower than average. However, Marine Corps students had commitment and control scores higher than other groups which are 10.50 and 10 points, while the challenge scores was lower than other groups and also lower than the average scores (6 points).

Table 6: Mean and Standard Deviation of Hardiness of Naval Cadets Categorized by Major Subjects (N=216)

Major Subjects	**Variables**								p-value[a]
	Hardiness		Commitment		Control		Challenge		
	M	SD	M	SD	M	SD	M	SD	
Electrical Engineering (Electronics)(N=151)	26.64	4.59	9.25	2.02	9.94	2.19	7.43	2.24	.360
Hydrographical Engineering (N=5)	27.40	6.22	9.80	2.68	9.40	2.30	8.20	2.28	
Marine Engineering (N=56)	26.50	4.85	8.98	1.96	9.48	2.58	8.03	2.36	
Management Sciences(N=4)	22.50	2.88	8.00	1.63	7.50	2.64	7.00	1.41	

[a] p-value of F-test

From Table 6, the results are demonstrated that naval cadets in each major had no statistically different hardiness. Students in each field have similar hardiness scores, except Management Sciences students had hardiness scores lower than other groups and lower than the average scores (22.50 points), in which all their 3 components; commitment, control and challenge, are also lower from scores of 8 points, 7.5 points and 7 points respectively.

Table 7: Mean and Standard Deviation of Hardiness of Naval Cadets Categorized by Previous Institution before Joining the Royal Thai Navy Academy (N=216)

Variables									
The previous institution before joining the Royal Thai Navy Academy	**Hardiness**		Commitment		Control		Challenge		p-value[a]
	M	SD	M	SD	M	SD	M	SD	
The Naval Rating school (N=12)	26.33	4.11	9.00	2.13	9.58	2.42	7.75	1.86	.872
The Armed Forces Academy Preparatory School (N=204)	26.55	4.71	9.18	2.01	9.77	2.32	7.59	2.29	

[a] p-value of F-test

From Table 7, the results are showed that naval cadets from the Naval Rating School and the Armed Forces Academy Preparatory School had no statistically different hardiness.

Table 8: Mean and Standard Deviation of Hardiness of Naval Cadets Categorized by GPA Acquired before Joining the Royal Thai Naval Academy (N=216)

Variables									
GPA acquired before joining the Royal Thai Naval Academy	**Hardiness**		Commitment		Control		Challenge		p-value[a]
	M	SD	M	SD	M	SD	M	SD	
2.00-2.49 (N=14)	24.78	3.42	8.92	1.77	9.07	1.63	6.78	1.52	**.005**
2.50-2.99 (N=60)	25.30	4.93	8.68	2.04	9.01	2.38	7.60	2.40	
3.00-3.49 (N=100)	26.79	4.55	9.26	1.96	9.95	2.42	7.58	2.12	
3.50-4.00 (N=42)	28.33	4.38	9.76	2.04	10.64	1.81	7.92	2.58	

[a] p-value of F-test

From Table 8, the results are showed that naval cadets with different GPA from previous institution before joining the Royal Thai Naval Academy had statistically different hardiness at .05. Meanwhile, students with good grade are likely to have a higher hardiness scores.

Table 9: Mean and Standard Deviation of Hardiness of Naval Cadets Categorized by Family Status

	Variables								
	Hardiness		Commitment		Control		Challenge		p-value[a]
Family status	M	SD	M	SD	M	SD	M	SD	
Marital status of parents									
Parent live together (N=190)	26.51	4.76	9.16	2.01	9.73	2.36	7.62	2.33	.213
Divorce (N=9)	26.77	3.11	9.33	1.73	9.88	2.02	7.55	1.87	
Father died (N=11)	27.72	4.40	9.45	2.38	10.63	2.01	7.63	1.74	
Mother died (N=5)	23.20	2.16	8.00	.70	8.80	2.38	6.4	.89	
Currently, naval cadets live with									
Parent (N=183)	26.51	4.80	9.16	2.04	9.72	2.39	7.62	2.35	.387
Father (N=5)	23.40	2.40	8.00	.70	8.60	2.40	6.80	1.48	
Mother (N=21)	27.42	4.16	9.38	2.20	10.38	1.74	7.66	1.90	
Others (N=7)	26.85	2.67	9.71	.75	9.85	1.95	7.28	1.38	

[a] p-value of F-test

From Table 9, the results are showed that naval cadets with different family status had no statistically different hardiness. Based on detail, found that

students whose parents are live together, divorced and father passed away had similar hardiness (26.51, 26.77 and 27.72 points respectively). The students whose mother had passed away had hardiness scores lower than other groups and much lower than the average score (23.20 points). Additional consideration, students who live with only their father had hardiness scores of 23.40 which are lower than the average as well.

Part 3: The relationship between the hardiness and naval professional training performance and the predictive of their training performance with Stepwise Multiple Regression Analysis.

Table 10: Correlation Coefficients between Hardiness and Naval Professional Training Performance

Variables	**Hardiness**			
	Hardiness	Commitment	Control	Challenge
The naval professional training performance	r (p-value)	r (p-value)	r (p-value)	r (p-value)
1st year	**.415 (.001)**	**.344 (.007)**	**.304 (.016)**	**.256 (.037)**
2nd year	**.567 (<.001)**	**.457 (<.001)**	**.571 (<.001)**	**.279 (<.019)**
3rd year	**.394 (.002)**	**.363 (.003)**	**.407 (.001)**	.174 (.104)
4th year	**.391 (.001)**	**.291 (.015)**	**.247 (.033)**	.120 (.189)
Total	**.454 (<0.001)**	**.358 (<0.001)**	**.398 (<0.001)**	**.210 (0.002)**

From Table 10, the results are showed that the statistical analysis of the Pearson Correlation Coefficient between hardiness and the naval professional training performance in all of students found that hardiness and three components are positively correlated to the naval professional training performance ($p < .01$). The relationship between hardiness and the naval professional training performance in each academic year are found that hardiness and three components are positively correlated to the naval professional training performance for 1st year and 2nd year students at the statistical significance level of .01 and .05, while in 3rd year and 4th year students are found that hardiness, commitment and control are positively correlated to the naval professional training performance at the statistical significance level of .01 and .05.

Table 11: Correlation Coefficients between Hardiness and Theoretical Studies Results

Variables	Hardiness			
	Hardiness r (p-value)	Commitment r (p-value)	Control r (p-value)	Challenge r (p-value)
The theoretical studies results	**.392 (<0.001)**	**.318 (<0.001)**	**.371 (<0.001)**	**.146 (0.032)**

From Table 11, the results are showed that the statistical analysis of the Pearson Correlation Coefficient between hardiness and the theoretical studies results of naval cadets are found that hardiness, commitment and control were positively correlated to the theoretical studies results at the statistical significance level of .01 and challenge is related to the theoretical studies results at the statistical significance level of .05.

Table 12: Correlation Coefficients between Hardiness and Practical Training Results

Variables	Hardiness			
	Hardiness	Commitment	Control	Challenge
	r	r	r	r
The practical training results	(p-value)	(p-value)	(p-value)	(p-value)
The Training results	**.266**	**.199**	**.142**	**.225**
	(<0.001)	**(0.003)**	**(0.036)**	**(0.001)**
Scores from characteristics and moral of military personals				
Discipline scores	.016	-.026	.003	.054
	(0.810)	(0.707)	(0.965)	(0.433)
Military appropriateness scores	**.165**	**.215**	**.162**	-.016
	(0.015)	**(0.001)**	**(0.017**)	(0.816)
Physical education scores	.067	.110	.104	-.067
	(0.329)	(0.108)	(0.127)	(0.330)
Total	**.261**	**.214**	**.145**	**.200**
	(<0.001)	**(0.002)**	**(0.034)**	**(0.003)**

From Table 12, based on the statistical analysis of the Pearson Correlation Coefficient, it is found that hardiness and three components related to the practical training results of naval cadets at the statistical significance level of .01 and .05.

There are 2 parts of the practical training results; the training results and scores from characteristics and moral of military personals. From the results, it is found that the hardiness, commitment and control are positively correlated to the training results at the statistical significance level of .01, while challenge is related to the training results at the statistical significance level of .05. For the scores from characteristics and moral of military personals, the hardiness and control are positively correlated to the military appropriateness scores at the statistical significance level of .05 and commitment is related to the military appropriateness scores at the statistical significance level of .01.

Table 13: Correlation Coefficients between Hardiness and Academic Years of Naval Cadets

Variables	**Hardiness**			
	Hardiness	Commitment	Control	Challenge
	r (p-value)	r (p-value)	r (p-value)	r (p-value)
Academic years	-.023 (0.740)	.055 (0.420)	.009 (0.899)	-.105 (0.125)

From Table 4.13, according to statistical analysis of Pearson Correlation Coefficient, it is showed that hardiness and three components are not related to academic years of naval cadets at the statistical significance level of .05.

Table 14: Analysis of the hardiness components explaining the naval professional training by Stepwise Multiple Regression Analysis

Predictors	B	Beta	T	Sig.
Control	**.056**	**.400**	**6.542**	**<0.001**
Challenge	**.031**	**.214**	**3.498**	**0.001**

Constant = 2.368 R=.452 R^2= .204 F= 27.298** SE est = $\pm$.292

From Table 14, based on the Stepwise Multiple Regression Analysis is revealed that Control and Challenge can be predicted the naval professional training performance of naval cadets with statistically significant at the 0.01 level (predictability = 20.4). The multiple correlation coefficient is equal to 0.452 and standard error of prediction is $\pm$ 0.292.

From the result, an equation can be formulated to predict the naval professional training performance of naval cadets as follows:

$$Y = a + b_1X_1 + b_2X_2$$

Y = The naval professional training performance

a = Constant Value

b_1 = The Coefficient of Control

b_2 = The Coefficient of Challenge

X_1 = Control

X_2 = Challenge

The naval professional training performance = 2.368 + 0.056 (Control) + 0.031(Challenge)

CHAPTER V
DISCUSSION AND CONCLUSION

This study is a descriptive study which has an aim of studying the relationship between hardiness and naval profession training performance of naval cadets, and the relationship between academic years and improvement of hardiness is also expected. There are 3 main instruments used in this study: 1) Questionnaire aimed to collect personal data 2) The hardiness test called Dispositional Resilience Scale (DRS15), Thai version. 3) The naval professional training performance of naval cadets. The population in the study is comprised of 216 selected students who were studying between years 1 and 4 in the academic year 2009. Discussion, conclusion and recommendation of this research are defined as follows:

5.1 Discussion

This study is separately discussed for the results in two areas as follows:

5.1.1 Hardiness of the Royal Thai Naval Academy students

5.1.2 Hypothesis testing the relationship between hardiness and naval professional training performance of naval cadets.

5.1.2.1 Hypothesis 1: Hardiness has a positive correlation with the naval professional training performance in naval cadets.

5.1.2.2 Hypothesis 2: Hardiness can be used to predict the outcome of the naval professional training performance.

5.1.2.3 Hypothesis 3: Academic year has a positive correlation with the naval professional training performance of naval cadets.

5.1.1 Hardiness of the Royal Thai Naval Academy students

The hardiness's total score of Thai naval cadets is represented as 26.54, compared with Bartone's study of the United States Military Academy at West Point cadets with the number of 4,102 men who had overall hardiness score equal to 29.2. Meanwhile, their hardiness scores are closely resulted with the rate of Thai naval cadets, which are slightly lower scores. There are several reasons; one way might be possible that it was a different academic system of teaching-learning. In the United States Military Academy at West Point, there were various academic fields provided to the students both males and females, as well as the numbers of US cadets were also more than Thai naval cadets. As a result, there was a difference in level of adjustment and hardiness of students between both schools. In addition, considering to the measurement of hardiness in this study (DRS15), there was still no standard of measurement for the population in each group, as well as this type of measurement had not ever been studied in Thailand before. Therefore, it is still not concluded whether or not the level of hardiness of Thai naval cadets is lower or higher than other groups of populations based on the standard scores in Thailand.

Considering the components, the outcome is resulted as control with the highest score, followed by commitment and challenge with the lowest score. The control is meant to persons who believe that they can control themselves in the various situations, can find reasons to explain the consequences of situations, so that they can have a skill to manage and control what happens in life (7, 8, 30-33). Due to the strict learning and teaching system, rules and regulation, and disciplines in military schools, this is leaded naval cadets to have a high controllability over their own study and activities as a daily schedule; therefore they could control and organize their own study life in the military school. Moreover, the commitment is confidence in doing things that occur in life. Naval cadets who had commitment, they known their goals in the military school and had good motivation for learning in their school. However, naval cadets must follow the rules of military students all the times of being in the military school. Thus, naval cadets face with strange events, unfamiliar with something new happens and even feeling unsecured, as a result of the lowest challenges.

Considering the hardiness and personal information: academic year, professional tracks, major subjects, previous institution before joining the Royal Thai Navy Academy, GPA acquired before joining the Royal Thai Naval Academy, and details regarding family backgrounds, the results are showed as follow:

5.1.1.1 Academic year

This study is found that naval cadets in each academic year have no different in level of hardiness. When considering the details, naval cadets in year 3 has the highest levels of hardiness scores, while 3 components are also similar. According to the result, it is possible that the data was collected from third year student who were going to further study in forth year, which is the highest level in the school. This group of student was the senior in the Royal Thai Naval Academy before graduation, so they would have a good adaptation for living and learning in military schools and they would also have more responsibility in caring for students who had lower class. While students who were studying in the fourth year were going to graduate from the Royal Thai Naval School, which was considered as a step forward the adaptation of working life. Therefore, their hardiness level would be possible to be decreased and lower than average since the hardiness is learnable traits and can be adjusted to be increased-decreased depended on each different situation (16,21,54).

5.1.1.2 The professional tracks

Naval cadets in each professional track had no different in hardiness scores. Considering to the details, the study is found that students in the Marine corps had commitment and control scores little more than other groups, while the challenge scores was lower than other groups, possibly due to the Marine corps was performing their duties in infantry training and practice which are different from the others. However, the numbers of samples of students in the Marine Corps with only two students are unable to conclude as a representative of the entire Marine Corps students.

5.1.1.3 Major Subjects

Naval cadets in each field of study had no different in hardiness scores. When considering the details, Management Sciences students had hardiness and 3 components scores are lower than other major subjects and much lower than average scores too. It is possible that naval cadets who studied in Management Sciences had low academic performance. According to Pecharanin N(92) mentioned that the Management Science in the Royal Thai Naval Academy was opened for naval cadets who had low grades and could not attend in Engineering filed. This study was also showed that students with good grades will had high hardiness. Therefore, when compared hardiness scores of students who were studying in other subjects, Management Science students had low hardiness scores. However, based on the statistical analysis of differences, found that students in each Major subject had no different hardiness level.

5.1.1.4 The Previous Institution before Joining the Royal Thai Navy Academy

Naval cadets from different institutions of previous study before joining the Royal Thai Navy Academy had no different in hardiness level. Considering the details, found that students who graduated from the Naval Rating School had hardiness score slightly lower than the Armed Forces Academy Preparatory School students. It is possible that the students who graduated from the Naval Rating School need to adjust in an unfamiliar environment of teaching-learning system and different senior systems from their previous schools. They were also must adapt to getting familiar with the new friends group. This may influence in results of the total scores of hardiness, commitment and control were slightly lower than the average score. However, students who graduated from the Armed Forces Academy Preparatory School had the challenge score higher than the average score, which is able to be support by the reason that these students had good motivation for further life after graduated from the Royal Thai Navy Academy , that affect the advancement of the work life in the future. As a result, there was a belief that the changes can be challenging and the development of both psychological and physical in the future.

5.1.1.5 GPA Acquired Before Joining The Royal Thai Naval Academy

Naval cadets with different GPA before joining the Royal Thai Naval Academy had statistically different hardiness at a significant level of .05. Students with good grade are more likely to have higher hardiness scores. This is consistent with the study of Sheard and Golby (12) Sinclair and Tetrick (93) stated that hardiness is positively related to academic performance.

5.1.1.6 Marital Status of Parents

Naval cadets with different family status had no statistically different hardiness. Based on detail, found that students whose parents are live together, divorced and the father with death had similar hardiness. The students whose mother died had a hardiness scores lower than other groups and much lower than the average score, while students who lived with their father had hardiness less than the other group as well. It was possible that children who lack of parents might need to more adjustment than students whose parents are together. By coping with the situation that causes stress and then get enough emotional support to the development of personal hardiness as well (16,32,33). Developing secure attachment, especially with the mother that supported individuals view the world in a way that threats and violence less than others and develop the adversity too (94).

5.1.2 Hypothesis testing of the relationship between hardiness and naval professional training performance of naval cadets

5.1.2.1 Hypothesis 1 hardiness has positive correlation with the naval professional training performance in naval cadets.

The statistical analysis of correlation between hardiness and the naval professional training performance in all of students found that hardiness and the three components were positively correlated to the naval professional training performance ($p < .01$).

The total hardiness had moderate relationship with the naval professional training performance of naval cadets, whereas the three components which were commitment, control and challenge had low relationship with the naval professional training performance.

When separating the results of naval professional training performance to be 2 parts: theoretical studies and practical training results, and considering them separately, the results were discussed as detailed below:

Hardiness and the theoretical studies results

The total hardiness, commitment and control were positively correlated with the theoretical studies results at the statistical significance level of .01, and challenge was related to the theoretical studies results at the statistical significance level of .05. This was consistent with the studies of Sheard and Golby (12), which studied hardiness components and the academic performance of sport and exercise of undergraduate students in the northeast of England .They were found that commitment and total hardiness were significantly and positively correlated with academic success criteria. According to the study of Sheard (13), it was found that commitment was the most significant positive correlation of academic achievement. This was also consistent with the study of criticism about the research on hardiness of Sinclair and Tetrick (93). The study was aimed to study the ability to predict health outcomes by using the measure of the 48 items of Dispositional Resilience Scale by Bartone et al. This study found that hardiness and the three components was positively related to GPA and the predicted GPA was statistically significant at the level of.01.

Considering other personalities that were associated with academic performance, conscientiousness was also correlated with academic performance (95,96) According to the studies of Maddi and Khoshaba (3) that studied the relationship between hardiness and comprehensive test of personality and psychopathology by using PSV II (Personal View Survey II) which was 45-item scale by Maddi, it was found that total hardiness, commitment and control were associated with conscientiousness. Therefore, it can be concluded that hardiness is likely to be correlated with academic performance.

This is also in accordance with the study of Hystad et al (62) which studied hardiness and learning of college students, using a measure of hardiness Dispositional Resilience Scale (DRS15). The study found that commitment was associated with successful adaptation to life on campus. Students could manage to live life better on campus and had high motivation in learning. This motivation was also one of the factors that encouraged students to succeed in school as well (95).

Hardiness and The practical training results

The total score of the practical training results was related to hardiness and the three components at the statistical significance level of .01 and .05.

The practical training results were separated into 2 parts; the training results and the scores from characteristics and morals of military personals. It was found that the hardiness and three components were positively correlated to the training results. As for the characteristics and morals of military personals, it was divided into 2 parts; the scores from behaviors, military appropriateness, and physical education It was found that the scores of Military appropriateness was positively correlated with hardiness, commitment, and control. As for the score of discipline and physical education , it had no relation with hardiness.

Considering the overall results of this study, they were consistent with the study of Bartone (17) who studied personality, hardiness and other factors which were the indicators of the leadership in American cadets. The study found that hardiness is a good predictor of learning records and development in the military (Military Develop grades). This was also corresponded with the study of Bartone, Roland, Picano and Williams (18), saying that the academic success of military who enrolled in the US Army Special Forces had a positive relationship with the hardiness. It was also consistent with the study of Bartone and Snook (20), the results of this study showed that hardiness can predict military leadership performance. This corresponds with the study of Bartone, Eid, Johnsen, Laberg and Snook (22) in 2009. The study found that hardiness is one of the variables that could predict leadership in the US military academy cadets at West Point.

When considering the overall results, it can be concluded that hardiness has positive correlation with the naval professional training performance in naval cadets. Therefore, this study supports the hypothesis 1.

5.1.2.2 Hypothesis 2 hardiness can be used to predict the outcome of the naval professional training performance.

The hardiness components: control and challenge, could predict the naval professional training performance of naval cadets with statistically significant at the 0.01 level (predictability=20.4). The multiple correlation coefficient was 0.452 and standard error of prediction is $\pm$ 0.292. Therefore, this study supports the hypothesis 2.

Hardiness was just one of many factors that was relevant to the training of cadet education. Therefore, it could predict the training study only 20.4 percent. There were several factors associated with the development of military characteristics that were consistent with the study of Bartone (17) who studied hardiness and other cognitive and personality variables to predict leadership in the US cadets. This study found that hardiness was a good predictor of learning and development in the military (Military Develop grades). In addition, Bartone and Snook (20) also found that hardiness, transformation leadership, extraversion, traditional value and social Judgment Skill could predict leadership in male military students. In 2009, Bartone, Eid, Johnsen, Laberg and Snook (22) found that leadership training performance could be predicted by extraversion, conscientiousness and hardiness. In addition to these personalities, there were also other factors related to academic performance of military students. As in the study of Panlainak P. (87), who studied factors associated with the leadership of the Armed Forces Academy Preparatory School students, he found that school factors such as the traditions of schools and learning atmospheres were correlated with the leadership. Furthermore, there were several other factors which involved the academic performance of military students such as genetic factors and family Support (56).

In addition to the other literature reviews, it was found that they were studies about other psychological characteristics which made individuals

more successful in work. One of them is called Psychological Capital by Luthans. Psychological Capital consists of four areas: efficacy/confidence, hope, optimism and resiliency. “The efficacy / confidence” is a belief in the ability of oneself, encouraging one to do something challenging, creating motivations, altogether with managing and controlling the learning process of future planning to reach ones’ goals. “Hope” believes that people can create a pathway to help themselves achieving their goals (pathway thinking) and create energy which is necessary for that way (agency thinking). “Optimism” is a clear format to permanently bring positive events into internal self and can use such events in other situations. “Resiliency” is the ability to bounce back after encountering obstacles, failures, uncertainties, or even positive changes, progress and increased responsibilities. These elements brings positive psychology to use in developing individuals and organizations to become successful (77,78). When considering the meanings of these 4 elements of psychological capital, it was found that these features are similar to hardiness. Hardiness includes commitment, control and challenge. These components will help a person to know his or her own life goals, be able to control what’s going to happen, including the consequences that will follow. This person will learn and grow, in both positive and negative situations. Hardiness is also one of the factors that will lead to Resilience (72,73), which helps a person to adapt oneself and go through stressful situations.

The other aspects that were related to academic performance, it was found that the average grades in high school was related to academic performance in higher education. This was consistent with the study of Oopkeaw (55), who found that secondary schools’ average grades had higher predictive validity than non equate secondary schools’ average grades significantly at .05 statistical level. As with the study of Boonsuya (86), it was found that academic performance in high school was one of the factors that affected academic achievement in undergraduate. In this study of hardiness in naval cadets, it was found that naval cadets with different GPA before joining the Royal Thai Naval Academy had statistically different hardiness at .05. Students with good grades were more likely to have higher hardiness scores. The result of this research also found that hardiness was positively correlated with the results of studies of cadet training. It was therefore possible that the GPA before

joining the Royal Thai Naval Academy was related to the academic performance of naval cadets.

5.1.2.3 Hypothesis 3 academic year has positive correlation with the naval professional training performance in naval cadets.

The study found that hardiness and three components were not related to academic years of naval cadets at the statistical significance level of .05 and found that the hardiness scores of naval cadets in each grade did not differ much.

There were also studies concerning the military characteristics in other military or police cadet schools that follow the same rules and disciplines as naval cadets. It was found that the characteristics the cadets should have, or should be increased during the study years in the school were not so different in each class year. As in the study of Klaykleung P (88) who found that the military leader attributes of the pre-cadet at the Armed Forces Academies Preparatory School as a whole and its aspects were at a high level. Rank ordering of means were decision-making competencies, human relations, responsibility, and creative thinking. The military leader attributes of pre-cadets were compared by considering the service, class, and student leader position variables. There was no significant difference found in this study. Furthermore Pukdeenarong (97) found that the motivation in learning of the police cadets in each grade did not differ much. It was also Sattayapat T (98) who complied that moral reasoning, future orientation-self control, and achievement behavior of all 4 years of the police cadet students had no significant difference.

However, even the study of Maddi, it was found that people who was trained in hardiness training would have more hardiness (16) However, since hardiness was a feature that would be changed and could be learned depends on practice, but maybe because of the instructions and rules of military schools that did not comply with the development of hardiness, or the fact that the students must be strictly disciplined, and must comply with the order, must be trained and studied hard, students might lose their enthusiasms and were not motivated (4). Thus, it affected the developments of their hardiness and other features that they should have, or should be increased when they study in higher grades.

In conclusion, the class year of study did not correlate with the hardiness of the naval cadets, Therefore, this study does not support the hypothesis 3.

5.2 Conclusion

The objective of this descriptive study is to find the relationship between hardiness and naval professional training performance of naval cadets and the relationship between academic years and improvement of hardiness is also expected. There are 3 tools used in this study : 1) the questionnaire aimed to collect personal data 2) The hardiness test called Dispositional Resilience Scale (DRS15), Thai version. 3) The naval professional training performance of naval cadets. The population in the study was Thai naval cadets who studied in the Royal Thai Naval Academy, comprised of 216 selected students who were studying between years 1 and 4 in the 2009 academic year, at 1^{st} year = 50, 2^{nd} year = 56, 3^{rd} year = 54, and 4^{th} year = 56.

As for the personal data of the naval cadets, it showed that the numbers of naval cadets in each year did not differ much (between 23.1% and 25.9%) age between 19-25 years. Most of the students were studying in General (Navigation) (72.2%) followed by Engineering (26.9%) and most of them were also studying in Electrical Engineering (Electronics) (69.9%) and followed by Marine Engineering (25.9%). Most of the naval cadets graduated from the Armed Forces Academy Preparatory School (94.4%) and about half (46.3%) of them had the GPA from the previous institution before joining the Royal Thai Navy Academy between 3.00 to 3.49. The family status found that most of their parents lived together (88%) and most students also lived with their parents (84.7%).

The total GPA of The naval professional training performance is 3.14, divided into two parts: 1) The theoretical studies results ; GPA of academic year 2009 is 2.74 and 2) The practical training results ; GPA of The practical training is 3.71.

The average score of hardiness in naval cadets is 26.54 ; comprising of 9.17 points for commitment, 9.76 points for control and 7.60 for challenge. Furthermore, the naval cadets in each academic year had no statistically different

hardiness. Considering the details, it was found that students in third years had the highest hardiness scores (27.24 points). Students in second year and fourth year had hardiness scores slightly lower than average and the fourth year student had the lowest hardiness.

The naval cadets in each professional track, major subjects had no statistically different hardiness. Considering the details, students in each field had similar hardiness scores, except Management Sciences students who had the hardiness scores lower than other groups and lower than average (22.50 points) Their 3 components were also lower too.

It was also found that naval cadets from the Naval Rating School and the Armed Forces Academy Preparatory School had no statistically different hardiness. Interestingly, the naval cadets with different GPA before joining the Royal Thai Naval Academy had statistically different hardiness at .05 and students with good grades were more likely to have higher hardiness scores. Considering the family status, naval cadets with different family status had no statistically different hardiness.

The statistical analysis of the Pearson Correlation Coefficient between hardiness and the naval professional training performance in all of students found that hardiness and the three components were positively correlated to the naval professional training performance ($p < .01$). The total hardiness, had moderate relationship with the naval professional training performance of naval cadets($r = .454$). Three components which were commitment, control, and challenge had low relationship with the naval professional training performance($r = .358$, .398 and .210, respectively).

Considering 2 parts of the naval professional training performance of naval cadets: The theoretical studies results and the practical training results, it was found that the total hardiness, commitment and control were positively correlated to the theoretical studies results at the statistical significance level of .01, with moderate to low relationship ($r = .422$ - .318). Challenge related to the theoretical studies results at the statistical significance level of .05, with very low relationship ($r = .146$ - .171)

The total hardiness and three components related to the practical training results in naval cadets at the statistical significance level of .01 and .05 with quite

low to very low relationship (r = .145- .261). There are 2 parts of the practical training results; the training results and scores from characteristics and moral of military personals. It was found that the hardiness and three components were positively correlated to the training results with quite low to very low relationship (r = .142 -.266). The hardiness, commitment and control were positively correlated to the Military appropriateness scores, which the part of the scores from characteristics and moral of military personals with quite low to very low relationship (r = .162 - .215)

The hardiness and three components were not related to academic years of naval cadets at the statistical significance level of .05. It was found that the hardiness scores of naval cadets in each grade did not differ much.

The stepwise multiple regression analysis revealed that hardiness components: The hardiness components: control and challenge could predict the naval professional training performance of naval cadets with statistically significant at the 0.01 level (predictability=20.4). The multiple correlation coefficient is 0.452 and standard error of prediction is $\pm$ 0.292.

From this study, even it was found that the relation between hardiness and naval professional training performance of naval cadets were slightly low. This was because there were many factors related to academic performance of naval cadets. It was also found that the naval cadets with different GPA before joining the Royal Thai Naval Academy had different hardiness and students with good grades were more likely to have a higher hardiness scores. In addition, there were also other personal and school factors that were related to the study of naval cadets. However, this study can be used as a guide in the development of personality that is appropriate for military students.

5.3 Research Limitations

5.3.1. The DRS 15 by Bartone, the hardiness scale used in this study, is a measurement of the Self-rating scale. Therefore, it should be used in self-assessment to develop the appropriate characteristic. Moreover, this measurement scale doesn't have a standard score of the Thai population in each group, and there is no cut-off score.

5.3.2. The populations in this study were naval cadets who studied in military school which were different from other undergraduate students. Therefore, those who would like to use the data from this study should be aware of this limitation.

5.4 Recommendations

This study found that there are many factors associated with the development of military characteristics. In additional study, further studies of hardiness and other factors that are associated with the naval cadets since the day they were admitted to the Armed Forces Academy Preparatory School and the Royal Thai Naval Academy, such as Psychological Capital and other schools factors, are recommended in order to guide the development of appropriate characteristics of the naval cadets in the future.

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APPENDICES

APPENDIX A
LIST OF EXPERTS

1. Miss Jariya Chantra
   Department of Psychiatry, Faculty of Medicine Siriraj Hospital

2. Mr. Keerati Bunnagulrote
   Department of Psychiatry, Faculty of Medicine Siriraj Hospital

3. Lecturer Soisuda Imaroonrak
   Department of Psychiatry, Faculty of Medicine Siriraj Hospital

4. Lt. Sararat Chanklin
   Royal Thai Navy Language Center, Naval Education Department

APPENDIX B

SAMPLE OF DISPOSITIONAL RESILIENCE SCALE (DRS15) (Thai)

แบบวัดความเข้มแข็งอดทน (DRS15)

คำแนะนำ ข้อความต่อไปนี้เกี่ยวข้องกับเรื่องราวในชีวิต ที่บุคคลมีความรู้สึกแตกต่างกัน ดังนั้น กรุณาตอบตามความเป็นจริงตรงกับความคิดของท่านมากที่สุด ไม่มีคำตอบที่ถูกหรือผิด โดยใส่เครื่องหมาย / ในช่องที่ตรงกับความรู้สึกของท่านมากที่สุด

ข้อคำถาม	ไม่เป็นความจริง	เป็นจริงบางส่วน	ค่อนข้างจริง	เป็นความจริงมากที่สุด
1. ฉันใช้เวลาส่วนใหญ่ในชีวิตทำสิ่งที่มีคุณค่า				
2. การวางแผนล่วงหน้า จะช่วยให้เราไม่ประสบปัญหาในอนาคต				
3. ฉันไม่ชอบให้มีการเปลี่ยนแปลงตารางประจำวันของฉัน				
4.				
5.				
.				
15.				

APPENDIX C

LICENSE AGREEMENT

Dispositional Resilience Scale (DRS15)

September 15, 2009

Lt.JG. Piyamaporn Singkhum
Department of Psychiatry
Faculty of Medicine
Siriraj Hospital
Mahidol University
THAILAND

TO ALL CONCERNED:

This letter is to verify that Lt.JG. Piyamaporn Singkhum is authorized and licensed to use the DRS15 (Dispositional Resilience Scale) instrument in research related to the Master Degree Program in Clinical Psychology at Mahidol University.

This license agreement is valid for one year from the above date. It is understood that the DRS15 instrument will be used for non-commercial research applications only, that copyright and license terms apply to any translations of the DRS15, and that no modifications to the items or scale are permitted other than direct language translation. If translated, a true copy of the translated scale will be provided to the instrument author (Paul T. Bartone) at the address given below.

Sincerely,

Paul T. Bartone, PhD.
2547 Arbor Court
Davidsonville, Maryland 21035
USA

+01 410 533 1463
bartonep@gmail.com

APPENDIX D

APPROVAL FROM THE COMMITTEE ON HUMAN RIGHTS RELATED TO HUMAN EXPERIMENTATION

2 PRANNOK Rd. BANGKOKNOI
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MAHIDOL UNIVERSITY
Since 1888
Siriraj Institutional Review Board

Certificate of Approval

COA no.Si 264/2010

Protocol Title : Hardiness and naval professional training performance in Royal Thai Navy Academy students

Protocol number : 214/2553(EC2)

Principal Investigator/Affiliation : Lt.JG. Piyamaporn Singkhum / Department of Psychiatry
Faculty of Medicine Siriraj Hospital, Mahidol University

Research site : Faculty of Medicine Siriraj Hospital

Approval includes :

1. SIRB Submission Form
2. Proposal
3. Participation Information Sheet
4. Informed Consent Form
5. Participation Information Sheet for determine the quality of the tools
6. Informed Consent Form for determine the quality of the tools
7. Questionnaire for Royal Thai Navy Academy students
8. Dispositional Resilience Scale (DRS-15)
9. Principle Investigator's curriculum vitae

Approval date : May 27, 2010

Expired date : May 26, 2011

This is to certify that Siriraj Institutional Review Board is in full Compliance with International Guidelines For Human Research Protection such as the Declaration of Helsinki, the Belmont Report, CIOMS Guidelines and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP).

(Prof. Jariya Lertakyamanee, M.D.)
Chairperson

June 1, 2010
date

(Clin. Prof. Teerawat Kulthanan, M.D.)
Dean of Faculty of Medicine Siriraj Hospital

June 7, 2010
date

Page 1 of 2

BIOGRAPHY

NAME	Lt.JG. Piyamaporn Singkhum
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