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THINKING STYLE PREFERENCES AND ACADEMIC PERFORMANCE OF STUDENTS IN INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM)

BY

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A dissertation submitted in fulfilment of the requirement for the degree of Master of Education in Educational Psychology

> Kulliyyah of Education International Islamic University Malaysia



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ABSTRACT

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The aim of this study is to investigate the relationship between the thinking style preferences and academic performance of students at International Islamic University Malaysia (IIUM) and its relationship to gender, Kulliyyah/faculty, nationalities and place of origin. The study used a quantitative approach to investigate the thinking style preferences of 360 (137 male, 223 female) IIUM students selected via a stratified random sampling from a total population of 4620 students from three different Kulliyyah/faculty in IIUM. Data were collected using the Herrmann Brain Dominance Instrument (HBDI) developed by Herrmann (2000). Descriptive analysis (mean, percentage and standard deviation), independent sample t-test, and one-way Analysis of Variance (ANOVA) were utilized in analysing the data. The general findings of this study revealed that there are no significant differences between the level of academic performance, gender, nationalities and place of origin with regard to the thinking style preferences of IIUM students in all quadrants. However, with regard to student's Kullivyah or their faculty, there are statistically significant differences found in Ouadrant A, B, C and D of their thinking style preferences. Accordingly, both internal and external factors are predominant in affecting the thinking style preferences of IIUM students.

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ملخص البحث

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الهدف من هذه الدراسة هو بحث العلاقة بين إختيارات نمط التفكير والأداء الأكاديمي للطلاب في الجامعة الإسلامية العالمية-ماليزيا وعلاقتها بجنس الطالب، وكليته الدراسية، وجنسيته، ومكان المنشأ. الدراسة تستخدم المنهج الكمي لبحث إختيارات نمط التفكير لـ 360 (137 طالب و 223 طالبة) من طلاب الجامعة الإسلامية العالمية-ماليزيا الذين تم إختيارهم بتطبيق العينة العشوائية لـ 4620 طالب من إجمالي عدد طلاب ثلاث كليات من الجامعة الإسلامية العالمية-ماليزيا.البيانات تم جمعها بإستخدام HBDI التحليل الوصفي (المتوسط، المعدّل والانحراف المعياري)، اختبار t -لعينة مستقلة و التحليل في اتحاه واحد للتباين (ANOVA) كانت قد استخدمت في تحليل البيانات. الاستنتاج العام لهذه الدراسة أظهر عدم وجود اختلافات كبيرة بين مستوى الأداء الأكاديمي، وجنس الطالب، والجنسية، ومكان المنشأ، مع مراعاة إختيارات نمط التفكير لطلاب الجامعة الإسلامية العالمية-ماليزيا في جميع الأرباع. مع ذلك ، فيما يتعلق بكلية الطالب هناك إختلافات إحصائية جوهرية كانت قد وجدت في المربع A, B, C و D لإختيارات نمط تفكيرهم. وفقاً لذلك، العوامل الداخلية والخارجية هي السائدة في التأثير على إختيارات نمط التفكير لطلاب الجامعة الإسلاميةالعالمية-ماليزيا

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TABLE OF CONTENTS

🕓 05-4506832 😵 pustaka.upsi.edu.my 🚹 Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah

Abstract	ii
Abstract in Arabic	iii
Approval Page	iv
Declaration Page	v
Copyright Page	vi
Acknowledgements	vii
List of Tables	х
List of Charts	xii
List of Abbreviations	xiii

CHAPTER ONE: INTRODUCTION	1
Background of the study	1
Statement of problem	3
Research objectives	4
Research questions	5
Significance of the study	5
Definition of terms	6

CHAPTER TWO: LITERATURE REVIEW an Abdul Jail Shah	8 tbupsi
Introduction	8
Brain Dominance Research	9
Hemispheric Specialization	10
Lateralization	17
Triune Brain Theory	
Left Brain/Right Brain Theory	
Herrmann Whole Brain Model (HWBM) Four-Quadrant Theory	20
The Theory Behind Herrmann Whole Brain Model (HWBM)	23
Brain Theory in Educational Research	25
Thinking Style Preferences and Learning Style Models	
Thinking style preferences, academic performance and	
students characteristics	
Thinking style and gender	
Thinking style and ethnicity/nationality	40
Thinking style and place of origin	41
Thinking style and achievement	42
Summary of the review of literature	46

O5-4506832 Spustaka.upsi.edu.my

CHAPTER THREE: METHODOLOGY AND PROCEDURES	
Introduction	50
Research Design No-450433 pustaka.upsi.edu.my Renpustakaan luanku Bainun Population Pustaka.upsi.edu.my Kampus Sultan Abdul Jalil Shah DP PustakaTBain	^{un} 50 51 ^{ups}
Sample and Sampling Procedure	52
Instrumentation	53
Validity and Reliability of HBDI	54
Pilot Study	54
Data Collection Procedure	55
Data Analysis	56
Summary	56
CHAPTER FOUR: ANALYSIS AND FINDINGS	60
Introduction	60

muoduom	
Characteristics of Respondents	
Presentation of Findings	
Research Ouestion 1	
Research Question 2	
Research Question 3	
Summary	81
Summer y	•••••••••••••••••••••••••••••••••••••••

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATION

	83 -
C Introduction	83si
Summary of the Study	83
Summary of the Research Findings	84
Recommendation	91
Recommendation for Future Research	94
Conclusion	95
REFERENCES	96
APPENDIX A: Herrmann Brain Dominance Instrument (HBDI)	105
APPENDIX B: Informed Consent Letter	.114



O 5-4506832 Spustaka.upsi.edu.my f Perpustakaan Tuanku Bainun Perpustakaan Tuanku Bainun Pustaka TBainun btupsi

LIST OF TABLES

C	05-4506832 💱 pustaka.upsi.edu.my 👔 Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah 💟 PustakaTBainun	ptbupsi
<u>Table N</u>	o. Page	<u>No.</u>
2.1	Meta-Analysis of Several Studies Related to Thinking Style Preferences	36
2.2	Summary Chart of various Studies Concerning Thinking Style and Students Charesteristics	44
3.1	Population of Undergraduate Students at IIUM (2012/2013)	51
3.2	Stratified Random Sampling Procedure	53
3.3	Reliability Statistics Per Construct	55
3.4	Summary of Rubric for Research Methodology	58
4.1	Charecteristics of the Respondents According to their Demographic Variables	61
4.2	Descriptive Analysis: Gender and Thinking Style Preferences for each Quadrant	64
4.3 🕓	Independent-Sample t-Test: Gender and Thinking Style Preferences for each Quadrant	ptbupsi 65
4.4	Descriptive Analysis: Kulliyyah and Thinking Style Preferences for each Quadrant	66
4.5	Analysis of Variance (ANOVA): Kulliyyah and Thinking Style Preferences for each Quadrant	67
4.6	Scheffe's Pos Hoc Analysis: Kulliyyah and Thinking Style Preferences for each Quadrant	69
4.7	Descriptive Analysis: Nationalities and Thinking Style Preferences for ea Quadrant	ach 70
4.8	Independent-Sample t-Test: Nationalities and Thinking Style Preferences for each Quadrant	5 71
4.9	Descriptive Analysis: Place of Origin and Thinking Style Preferences for each Quadrant	73
4.10	Independent-Sample t-Test: Place of origin and Thinking Style Preference for each Quadrant	ces 74
4.11	Descriptive Analysis: Gender and Level of Academic Performance	pt 75 si

LIST OF TABLES

C	05-4506832 😵 pustaka.upsi.edu.my 🚹 Perpustakaan Tuanku Bainun 💟 PustakaTBainun 🚺	ptbupsi
Table N	o. Page 1	<u>No.</u>
2.1	Meta-Analysis of Several Studies Related to Thinking Style Preferences	36
2.2	Summary Chart of various Studies Concerning Thinking Style and Students Charesteristics	44
3.1	Population of Undergraduate Students at IIUM (2012/2013)	51
3.2	Stratified Random Sampling Procedure	53
3.3	Reliability Statistics Per Construct	55
3.4	Summary of Rubric for Research Methodology	58
4.1	Charecteristics of the Respondents According to their Demographic Variables	61
4.2	Descriptive Analysis: Gender and Thinking Style Preferences for each Quadrant	64
4.3 🕓	Independent-Sample t-Test: Gender and Thinking Style Preferences for each Quadrant	ptbupsi 65
4.4	Descriptive Analysis: Kulliyyah and Thinking Style Preferences for each Quadrant	66
4.5	Analysis of Variance (ANOVA): Kulliyyah and Thinking Style Preferences for each Quadrant	67
4.6	Scheffe's Pos Hoc Analysis: Kulliyyah and Thinking Style Preferences for each Quadrant	69
4.7	Descriptive Analysis: Nationalities and Thinking Style Preferences for ea Quadrant	ach 70
4.8	Independent-Sample t-Test: Nationalities and Thinking Style Preferences for each Quadrant	5 71
4.9	Descriptive Analysis: Place of Origin and Thinking Style Preferences for each Quadrant	73
4.10	Independent-Sample t-Test: Place of origin and Thinking Style Preference for each Quadrant	es 74
4.11	Descriptive Analysis: Gender and Level of Academic Performance	pt 75 si

4.12	Descriptive Analysis: Level of Academic Performance and Thinking Style Preferences	76
4.13	Analysis of Variance (ANOVA): Level of Academic Performance and Thinking Style Preferences	otbups 77
4.14	Descriptive Analysis: Factors Affecting Thinking style Preferences	79

05-4506832 🚱 pustaka.upsi.edu.my 🚹 Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah 💟 PustakaTBainun

xi

O 5-4506832 Spustaka.upsi.edu.my f Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun btupsi

LIST OF CHARTS

C) 05-4506832 🕜 pustaka.upsi.edu.my	Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah	PustakaTBainun	ptbupsi
Chart]	<u>No.</u>			Page No.
2.1	The Whole Brain Model			36
2.2	Histogram: Mean Scores	of HBDI		64
3.1	Bar Chart: Factors Affecti	ng Thinking Style Prefere	nces	79



05-4506832 🛞 pustaka.upsi.edu.my 📔 Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah 💟 PustakaTBainun 👘 ptbupsi

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LIST OF ABBREVIATIONS AND ACRONYMS

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CHAPTER ONE

05-4506832 Opustaka.upsi.ecINTRODUCTION

BACKGROUND OF THE STUDY

Thinking styles are increasingly becoming prominent in the areas of cognitive psychology research (Badi & Tajdin, 2005). Therefore, this research is aimed to integrate cognitive psychology in educational area. It is hoped that through this way, educators could apply and utilize the theories and principles governed in cognitive psychology to the teaching and learning in ways to improve educators' teaching methods as well as to enhance students' academic performance.

Individual may be different in their cognitive abilities due to two sources. According to Galotti (2008), they are different in terms of their cognitive abilities (concentrating on intelligence) and differences in cognitive styles of approaching particular tasks. The concern of this study is upon the individual differences in their cognitive styles. It can be illustrated with two persons with different thinking styles and how they approach the same types of tasks differently. This may explain why some people feel more comfortable with certain cognitive tasks and approach learning tasks differently than others.

Islam also emphasizes on the importance of the variety in thinking styles as the Our'an uses a variety of thinking styles in its messages to accommodate people with different thinking styles preferences (Badi & Tajdin, 2005). It is believed that by using these various thinking styles from the Qur'an, it will assist human beings to have a better understanding of the messages and lead a better life in this world. 05-4506832 🜍 pustaka.upsi.edu.my 🚹 Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah

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Moreover, students differ in their thinking styles whenever they approach the same types of tasks or subjects as the result of the influences from their environment, development and their personal needs for learning (Slavin, 2009). So, it is necessary for educators to be aware of such differences in their students' thinking styles and adjust their teaching methods and behaviour in a way that which suits the students' personal needs.

The term thinking is used to refer to more than one specific activity. So, this suggests that there may be different types of thinking (Galotti, 2008). According to Piaget's theory, children construct their own mental structures through a constant and active interactions with their environment (Slavin, 2009) and the way they view their world also changes with their development (Galotti, 2008).

Furthermore, the relationship between thinking styles and academic performance has received great attention over the last two decades (Albaili, 2006). 05-4506832 pustaka.upsi.edu.my Research has shown that certain thinking styles could be used as notable predictors of students' academic performance. So, it is necessary for educators to be aware of such differences in their students' thinking styles and adjust their teaching methods and behaviour in a way that suit the students' personal needs.

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STATEMENT OF PROBLEM

All existing cross-cultural studies have indicated that thinking styles significantly contribute to academic performance (Albaili, 2006). Furthermore, there are many similarities in which thinking styles predict academic performance across the different cultural groups (Zhang and Sternberg, 2000). Therefore, there are several studies which addressed thinking style preferences among the Malaysian population (Zainal, Shuib and Othman, 2004). However, the lack of studies which explore the thinking style differences among Malaysian university students and its relationship with student's academic achievement and performance need to be addressed by this study.

Although educators have been reprimanded for teaching only to the hemisphere and have been challenged to left adjust their instructional strategies to meet the needs of both sides of the brain, there still remain many important, unanswered questions concerning the potential impact of brain 05-4506832 👌 pustaka upsi e dominance research on education. It is not yet known, for instance, just how much students' individual brain preferences mean in the typical classroom especially for the university students. It has not been clearly established what the students' brain dominance patterns are actually are, nor to what extent these patterns do, in fact, affect not only their thinking processes, but other important considerations as well. It is not known, for instance, to what extent thinking style preferences affect their academic performance students' or achievement, or to what factors affecting their thinking style preferences.

Precisely, because of this paucity in the literature, further thorough and comprehensive investigation is necessary. In addressing this gap, this study will only focus on undergraduate students of International Islamic University Malaysia (IIUM). This university hosts a great number of students from Malaysia and from other

3

countries with various ethnic groups. Thus, this will create an interesting finding with respect to thinking styles and its relationship with their academic performances. Furthermore, to the best of the researcher's knowledge, the relationship between thinking style preferences and academic performance among IIUM students has not been fully studied and investigated (Jing, 2011). Hence, this is a significant area of research whereby the findings will add to the present body of knowledge and give better understanding on thinking style preferences and academic performances among undergraduate students at IIUM.

RESEARCH OBJECTIVES

The purpose of this present study is: (1) to examine the thinking style preferences among IIUM students and (2) to ascertain whether their thinking style preferences are

related to their academic performances.

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RESEARCH QUESTIONS

In conducting this study, several research questions have been formulated and they are 05-4506532 pustaka.upst.edu.my Kampus Sultan Abdul Jalil Shah PustakaTBainun as follow:

- Are there significant differences in the thinking style preferences among IIUM students with respect to the followings:
 - a) Gender b) Kulliyyah c) Nationality d) Place of Origin
- 2) Is there any significant relationship between the students' thinking style preferences and their academic performances?
- 3) What factors affect the thinking style preferences of IIUM students?

SIGNIFICANCE OF THE STUDY

Findings from this study could be used as a primary means for offering a more indepth understanding of thinking styles and the level of academic performance that might play an important role in enhancing student's academic achievement of higher education institutions in the Malaysian context. Hence, the findings will be an important source of information for higher learning institutions and instructors to select the appropriate teaching and learning strategies or pedagogy based on their students' thinking style preference.

Besides, the findings obtained from this research would also be useful and valuable in educational setting namely for structuring suitable course designs, teaching pedagogies, approach and students' assessment or evaluation. Teachers or educators should recognize their students' thinking style preferences because teachers or educators could structure the course design and students' evaluation in variety of

ways to cater various thinking styles of their students based on the level of their students' academic achievement in the classroom. Thus, this will give some room for pustaka.upsi.edu.my (05-4506832 the students to enhance their academic performance regardless of any discipline they are majoring. Other than that, the results of this study may alleviate the discrepancy in thinking styles research in Malaysian educational setting such as the preferences of our students towards the left brain or the right brain.

DEFINITION OF TERMS

1. Thinking style preferences

Thinking styles are defined as our preferred ways of using the abilities that we have. In managing our activities, we choose styles with which we feel comfortable (Sternberg, 1997). Sternberg contended that styles are thought to be distinct from abilities, and involve preferences, not necessarily conscious, in the use of whatever abilities one has. Styles are not connected solely with ability, but rather, preferred ways of expressing or using one or more abilities (Armstrong, 2000; Cano-Garcia & Hughes, 2000).

2. Academic performance

Academic performance can be defined as excellence in all academic disciplines, in class as well as extracurricular activities. It includes excellence in sporting, behaviour, confidence, communication skills, punctuality, and assertiveness. In university or college context, Cumulative Grade Point Average (CGPA) is used in assessing the students' academic performance (Albaili, 2006).

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3. Herrmann Whole Brain Model

Herrmann (2000) considers dominance as natural and normal in organisms that result from experiences and conditions faced by the organisms on a daily basis. So, the whole brain theory is mainly depending on thinking characteristics, whereas the brain is divided into upper left/right and lower left/right parts. As a whole, the upper part of the brain is concerned with conceptual and abstract thinking, whereas the lower part of the brain is entirely concerned with emotional and intuition (Bawaneh, Abdul Ghani, Salmiza & Khoo, 2011).

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CHAPTER TWO

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INTRODUCTION

Models of thinking styles varies, some of which are concerned with a thinker's personality traits, and others are interested in answering the question of how a thinker receives, processes, and align experiences, whereas others are focused on the sensory perceptual medium most preferable to a thinker when receiving, processing and aligning experiences.

As a result, thinking styles are depicted with various models and graphics with unilateral, bilateral, multiple and interfered polarizations (Qtami, 1998). These models are: Carl Jung, Kolb, Dunn and Dunn thinking style Model, Myers-Brigg, McCarthy, pustaka.upsi.edu.my 05-4506832 Sternberg, and Herrmann model (Hadfield, 2006; Anabela, Alvaro, Lilian & Mendes, 2007; Dunn & Dunn, 2003). Thus, in answering the research questions proposed, this study will adopt the Herrmann Whole Brain Model (HWBM), because Herrmann's Model is systematic, inclusive and considers a student's preferable thinking styles as being inconsistent and can be changed and developed.



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BRAIN DOMINANCE RESEARCH

The brain, weighing about three pounds and with the consistency of a firm jelly, OS-4506832 Pustaka.upst.edu.my Perpustakaan Tuanku Bainun consists of three main parts: the brain stem, an extension of the spinal cord connected to the cerebellum and forebrain; the cerebellum, responsible for coordinating voluntary muscular movements; and the forebrain, much of which consists of an outer layer, the cortex, and inner areas rich in nerve fibers. The surface of each hemisphere is thrown into convoluted folds called *gyri* separated by narrow fissures called *sulci*. A thick band of nerve fibers, the corpus callosum, links the two hemispheres. Deep within the forebrain are various central structures, which include the thalamus, hypothalamus, basal ganglia, and pituitary gland.

The two cerebral hemispheres appear identical, or symmetrical, but actually differ in size, shape, or placement from their asymmetrical counterparts. The temporal lobe of the left hemisphere is larger than that of the right hemisphere and the contours \bigcirc 05-4506832 \bigcirc pustaka.upsi.edu.my for Perputakaan Tuanku Bainun for PustakaTBainun for ptoupsi of each hemisphere differ in exact location, angle, and size from those of the corresponding areas of the other hemisphere. Even chemically, the hemispheres differ (Cherry, Godwin, and Staples, 2009).

Comparatively speaking, the left and right hemispheres involve verbal versus spatial, parts versus whole patterns, verbal versus configurational, and serial versus simultaneous processing. The left hemisphere processes sequentially, which is temporal or time-related. Verbal perception and generation depend on the awareness of the order or sequence in which sound occurs. This type of processing requires the ability to discriminate relevant features, to reduce a whole to meaningful parts or analysis. On the contrary, the right hemisphere specializes in simultaneous processing seeking patterns. It integrates component parts and organizes them into a whole that

The brain creates realities, examines alternatives, and exists on experiences. Through the vast amounts of information gathered during life, knowledge becomes the \bigcirc 05-4506832 \bigcirc pustaka.upsi.edu.my \bigcirc Perpustakaan Tuanku Bahun result of experience, and these experiences are what make thinking possible. As Smith argued in *To Think*, most learning emerges naturally from experience (Davis, 2003). De Bono (1970) spoke over 30 years ago of the need to change ideas because of technology speeding up the rate of communication and progress. Rather than developing satisfactory methods for changing ideas, society has depended on conflict. Only when the need arises does society respond to change.

HEMISPHERIC SPECIALIZATION

The brain is actually then two hemispheres connected by the corpus callosum. Each hemisphere controls the opposite side of the body and exhibits specific functions. Paul Pierra Broca, a French surgeon and anthropologist, discovered the relationship to the or 05-4506832 of pustake.upsi.edu.my for Perputakaan Tuanku Bainun for pustaka TBainun of ptoupsi right side of the body in 1861, when he noted that people with injuries to their left hemisphere either lost speech or had serious side effects. Carl Wernicke and Hugo Liepmann later discovered that the left hemisphere possessed specific brain functions not shared by the right hemisphere. Subsequent studies revealed more specifically that the right hemisphere specializes in visual-spatial awareness (Springer and Deutsch, 2001; Williams, 2003).

The greatest gains in understanding the functions of the two hemispheres resulted from the work of Roger Sperry and his colleagues who severed the corpus callosum to reduce or stop seizures in extreme cases of epilepsy. Through observations, Sperry and others examined more specifically the functions of each hemisphere. The size and shape of the corpus callosum differed between males and \bigcirc 05-4506832 \bigcirc pustaka.upsi.edu.my \bigcirc Perpustakaan Tuanku Bainun \bigcirc PustakaTBainun \bigcirc PustakaTBainun \bigcirc pustaka.upsi.edu.my

females, from left-handed and right-handed people, and from one profession to another profession (Trevarthen, 2007).

Severing or damaging the corpus callosum blocked the exchange of information between the two hemispheres. In extreme cases, surgeons severed the corpus callosum in epileptic patients to relieve seizures. While the patients showed little or no impairment of overall intellectual performance, motivation, emotion, or language, they exhibited behavioral effects when stimuli were limited to one side of the body or the other (Kalat, 2013). Experiments by Sperry and his students illustrated the effects of a severed corpus callosum and the inabilities of people to transfer this information verbally or kinesthetically. Thus, the two hemispheres of a split-brain person could process information and answer questions independently of the other.

person's behavior.

C 05-4506832 Pustaka.upsi.edu.my Perpustakaan Tuanku Bainun The slow development of hemispheric dominance and specialization was primarily due to the difficulties in measurement. Generally, the traits and resulting knowledge of the left hemisphere are more easily measured than those of the right because the left hemisphere houses language. The traits and knowledge of the right hemisphere, while equally important to human behavior, are less easily detected and measured because they are not expressed through spoken language (Cherry, Godwin, and Staples, 2009). Thus, consistency in findings became prevalent.

However, a transfer of meaning between the two hemispheres severely limited the

Traditional thinking promotes adequacy and action capability. Thinking subsides when the brain performs or accomplishes the task. However, through recognizing hemispheric specializations, better arrangements of information that go beyond mere adequacy may exist (De Bono, 1970). Both hemispheres are active and the subside of the subsid

takes over. The contribution of each hemisphere, however, relates to the cognitive processes that are unique to it. However, it is believed that the rational mind had to do 05-4506332 pustaka.upsi.edu.my reprutakaan Tuanku Banun with how individuals explain what they do, how well they understand a novel, or know math, for example. The other side, the experiential mind, had to do with how individuals react emotionally to the world (Scallan, 2008). Both hemispheres seem to have a capacity for many of the same cognitive functions, though each carries them out in its own unique way. In those particular cognitive functions, the one hemisphere exhibits dominance. Dominance therefore results when processes unique to a hemisphere are active, or in dual capacity, when one hemisphere takes charges of the processes.

According to Herrmann (2000), individuals who use cognitive strategies of the right hemisphere to approach a task are defined as right-brained for that task. If they organize their world with more cognitive strategies from the right hemisphere, they \bigcirc 05-4506832 \bigcirc pustaka.upsi.edu.my for Perpustakaan Tuanku Bainun for pustakaTBainun for pustaka are called right-brain dominant. Their approach is to seek out insight, images, concepts, and patterns. Likewise, if individuals exhibit strategies that are factual based, analytic and step-by-step, they are called left-brain dominant for that particulars task.

Language

The right hemisphere understands simple speech and often makes sense of written words, although it is less active than the left hemisphere during speech. When damage to the right hemisphere occurs, people tend to speak with less than the normal amount of inflection and expression, and may fail to appreciate humor and irony in speech. Thus, the right hemisphere may be more specialized for emotional expression than the right hemisphere may be more specialized for emotional expression than that of the left hemisphere (Kalat, 2013). It also appears more adept than the left

hemisphere at recognizing and dealing with complex visual patterns, though it is not necessary for all visual and spatial tasks. This explains why adults who are 05-4506832 pustaka.upsi.edu.my for Perpustakaan Tuanku Bainun experienced left hemisphere damage can communicate verbally through songs and why some stutterers can sing.

It is partially correct, then, to say that the left hemisphere specializes in language and the right hemisphere for complex visual functions, spatial functions, and certain aspects of emotion. The left hemisphere is sequential analytic and time dependent and treats stimuli as a sequence of units. In contrast, the right hemisphere is synthetic and holistic, forming patterns instead of breaking them into units.

Handedness

Handedness exemplifies the distribution of dominance across a continuum from left to right (Herrmann, 2000). Hand preference, which is largely but imperfectly related to 05-4506832 pustaka.upst.edu.my representation and the second se

Speaking triggers activity in the hand controlled by the hemisphere that controls language. Most people prefer the left hand in task that are right-hemisphere dominant. Of the 30% of left-handed preference people, 15% show speech control in the right hemisphere, and the other half show speech control coming from both the right and left hemispheres. Although most right-handed people are left-hemisphere O 05-4506832 O pustaka.upsi.edu.my Perpustakaan Tuanku Bainun dominant, some are right-hemisphere dominant. Right-handed people possess a greater ability to respond with both hemispheres, although one hemisphere remains dominant (Cherry, Godwin, and Staples, 2009). As most people use hand gestures PustakaTBainun 05-4506832 pustaka.upsi.edu.my ptbupsi while speaking, most right-handed people move the right hand more actively while they speak; left-handed people vary in which hand they move more actively (Kimura, 2005).

Differences between male and female lefthanders suggest that similarity has slight advantages for males' intellectual performances, but negligible effects on female's performance (Tiedt and Scott, 2001). Current findings in the theories of handedness through meta-analytic procedures suggest the need for further research.

The position of the writing hand also suggests hemispheric dominance. Most people write with the paper slanted slightly to the left and hold the writing hand below the line of writing, reaching up to the line with the writing instrument at an angle away from the body. Whether they are left-handed or right-handed, people who write ptbupsi 05-4506832 pustaka.upsi.edu.my in this manner indicate left-hemisphere dominance (Cherry, Godwin, and Staples, 2009). A study by Dufrene, Daniel, and Shane-Joyce (2002) suggested that no special teaching strategies are necessary to equalize the learning of students with specific hand preferences.

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