

THE UNCONSCIOUS THINKING PROCESSES OF STUDENTS

SEFFETULLAH KULDAŞ

A dissertation submitted in partial fulfillment of the requirements for the award of  
the degree of Master of Education (Educational Psychology)

Faculty of Education  
University Technology Malaysia

JUNE 2011

*To my mother Ruhlete Kuldaş*

## **AKNOWLEDGMENT**

In preparing this dissertation, I am deeply indebted to all my lecturers for their contribution towards my understanding and thoughts. In particular, I wish to express my sincere appreciation to my supervisor, Dr. Zainuddin Abu Bakar. I am also very thankful to Mr Ibrahim Mohammad Pour. I would like to extend my utmost gratitude to my dearest family especially to my mother and father Ruhlete and Esat, sisters Murşide and Mekiye, brothers Zahid, Fethullah, and Sedat, relatives Delobaş, Cahit, and family of Koldaş, and to my well beloved friends.

Without their exertion to support me, I would have never come this far.

## ABSTRACT

The purpose of this study was to investigate the factors underlying thinking processes of master degree students, with regard to their demographical factors, in the Faculty of Education at University Technology Malaysia. It was to enhance an understanding of how students' thinking processes work from the perspective of Freudian unconscious mind theory that every psychic action starts unconsciously. An exploratory research with quantitative and qualitative methods was conducted on 314 cases. The factors underlying students' thinking processes were identified by a maximum likelihood extraction method of exploratory factor analysis with direct oblimin-Kaiser Normalization. Three extracted factors solution namely "Rationalization," "Repression," and "Unconscious association," were displayed having an eigenvalue greater than 1.0 with Cronbach's alpha value of 0.92. These factors were explaining well enough the total variance by the value of 58.1%. Each extracted factor met the requirement of being a factor by loading size of 0.4 and above in rotated pattern matrix. An independent samples *t*-test and a one-way ANOVA between groups provided no significant differences between "Males and Females," "Malay and Non-Malay," "Muslim and Non-Muslim," and between "Age Groups" on the factors underlying their thinking processes. A Chi-square test for independence yielded no significant relationship between the groups of Gender, Age, Ethnic, Religion and their made choices. Comments from the respondents showed interesting indication on the students' thinking processes based on the unconscious desirable and undesirable thoughts. These findings indicated that the ways the students engaged in their thinking activities were quite the same based on the tested variables. It implies that the factors underlying students' thinking processes could be related to the other elements out of their conscious awareness. Accordingly, several suggestions and recommendations were provided for future references especially in explaining the students' thinking processes further.

## ABSTRAK

Tujuan kajian ini adalah untuk mengentahui faktor-faktor yang mendasari proses pemikiran pelajar Ijazah di Fakulti Pendidikan, Universiti Teknologi Malaysia, dengan memerhatikan faktor-faktor demografi mereka, untuk meningkatkan pemahaman tentang bagaimana proses fikiran pelajar berfungsi dari perspektif teori Freudian fikiran tak sadar menegaskan bahawa setiap tindakan psikik bermula secara. Sebuah kajian eksplorasi dengan kaedah kuantitatif dan kualitatif dilakukan pada 314 kes. Faktor-faktor yang mendasari proses pemikiran pelajar dikenalpasti dan di factor analisis dengan kaedah pemecahan dan serupa maksimum normalisasi oblumin-Kaiser langsung. Tiga faktor penyelesaian dikenalpasti iaitu “Rasionalisasi,” “Repressi,” dan kaitan bawah sedar memaparkan nilai eigenvalue lebih besar dari 1.0 dengan dengan nilai Cronbach alpha 0.92. Factor-farktor ini menjelaskan dengan baik jumlah variansi sebanyak 58.1 %. Setiap factor yang dikenalpasti memenuhi syarat-syarat menjadi factor dengan memuatkan saiz 0.4. dan di atas matriks corak penggantian. Ujian *t*-test tidak bersan dardan ANOVA tidak menunjukkan perbezaan yang ketara antara “Lelaki dan Wanita,” “Melayu dan Bukan-Melayu,” kumpulan “Muslim dan Bukan-Muslim,” dan antara “Umur,” pada faktor-faktor yang mendasari proses pemikiran mereka. Ujian Chi-square juga tidak menunjukkan hubungan yang ketara antara kumpulan jantina, umur, etnik, agama dan pilihan yang dilakukan. Walaubagaimanapun, komen daripada responden menunjukkan petanda yang menarik bekeanan dengan proses pemikiran mereka berdasarkan pemikiran bawah sedar dan tidak dikehandaki. Dapatan ini menggambarkan proses pemikiran pelajar berada dalam keadaan yang hampir serupa dengan mengambilkira *variable-variable* yang diuji. Ini membayangkan bahawa faktor yang mendasari proses berfikir pelajar boleh dikaitkan dengan unsur-unsur lain dari kesedaran mereka. Oleh itu beberapa cadangan dikemukakan kepada sesiapa yang ingin mendalami proses pemikiran pelajar lebih lanjut.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	<b>DECLARATION</b>	ii
	<b>DEDICATION</b>	iii
	<b>ACKNOWLEDGMENTS</b>	iv
	<b>ABSTRACT</b>	v
	<b>ABSTRAK</b>	vi
	<b>TABLE OF CONTENTS</b>	vii
	<b>LIST OF TABLES</b>	xi
	<b>LIST OF FIGURES</b>	xiii
	<b>LIST OF APPENDICES</b>	xiv
<b>1</b>	<b>INTRODUCTION</b>	
	1.0 Introduction	1
	1.1 Problem Background	3
	1.2 Problem Statement	9
	1.3 Purpose of Research	10
	1.4 Research Objectives	10
	1.5 Research Questions	11
	1.6 Significance of Research	11
	1.7 Scope of Research	12
	1.8 Definitions of Terms	13
	1.9 Theoretical Framework	18
	1.10 Conclusion	20

<b>2</b>	<b>LITERATURE REVIEW</b>	
2.0	Introduction	22
2.1	Conscious and Unconscious Processes	23
2.2	Psychoanalytic Theory of The Unconscious Mind	28
2.2.1	Instinct, Drive and Psychic Energy	31
2.2.2	Topographic Model of the Mind	37
2.2.3	Structural Model of the Mind	42
2.2.4	Unconscious Defense Mechanism	47
2.2.4.1	Repression	51
2.2.4.2	Rationalization	55
2.2.5	Unconscious Defense Mechanism and Anxiety	56
2.3	Post Freud: Psychoanalytic Theories on The Unconscious Mind	58
2.3.1	Alfred Adler	59
2.3.2	Carl Jung	59
2.3.3	Jacques Lacan	62
2.3.4	Erik Erikson	63
2.3.5	Karen Horney	64
2.3.6	Dollard and Miller	65
2.4	Techniques for Revealing The Unconscious Mind	65
2.4.1	Free Association	66
2.4.2	The Kent-Romanoff's Free Association Test	67
2.4.3	Word Association Test	68
2.4.4	Projective Tests	69
2.4.4.1	Rorschach Test	69
2.4.4.2	Thematic Apperception Test	70
2.4.4.3	Sentence Completion Test	71
2.4.4.4	Drawing	71
2.5	Cognitive Studies on Conscious and Unconscious Processes	71
2.6	Conscious and Unconscious Processes in Information Processing	74

2.6.1	Atkinson and Shiffrin's Model of Information Processing	76
2.6.2	Parallel Distributed Model of Information Processing	78
2.6.3	Frequency Model of Information Processing	78
2.6.4	Information Processing Models and The Unconscious Mind	79
	2.6.4.1 Associative Process of Experiences	82
	2.6.4.2 Mental Representation of Experiences	83
2.6.5	Thoughts and Behaviors	87
2.6.6	Past Experiences and Rational Characters in Thinking and Behavior	92
2.6.7	Intuition	96
2.6.8	Fear and Emotional Experiences	97
2.6.9	Intention	101
2.6.10	Self Esteem, Cultural Worldview and Unacceptable Thoughts	102
2.7	Conclusion	105

### **3 RESEARCH METHODOLOGY**

3.0	Introduction	111
3.1	Research Design	112
3.2	Research Population and Sample	113
3.3	Research Instrument	115
	3.3.1 Questionnaire on the Unconscious Thinking Processes of Students	116
3.4	Research Procedure	118
3.5	Data Analysis	119
3.6	Preliminary Survey	132
3.7	Pilot Study	133
3.8	Conclusion	144



<b>4</b>	<b>DATA ANALYSIS</b>	
4.0	Introduction	145
4.1	Analysis of Quantitative Data	147
4.1.1	Analysis of the Factors Underlying Thinking Processes of Students	148
4.1.1.1	Research Question 1	148
4.1.2	The Comparison between Demographical Factors of Students at the Factors Underlying Thinking Processes	157
4.1.2.1	Research Question 2	157
4.1.3	The Relationship between Demographical Factors of Students and Selection of the Choices	163
4.1.3.1	Research Question 3	163
4.2	Analysis of Qualitative Data	168
4.3	Conclusion	169
<b>5</b>	<b>DISCUSSION, CONCLUSION AND RECOMMENDATIONS</b>	
5.0	Introduction	170
5.1	The Students' Thinking Processes and Demographical Factors	171
5.2	Measuring The Unconscious Mind	178
5.3	Consciousness and Information Processing	184
5.4	Conclusion	190
5.5	Limitations of the Research	191
5.6	Recommendations	191
	<b>REFERENCES</b>	194-217
	Appendices A-C	218-238

## LIST OF TABLES

TABLE NO.	TITLE	PAGE
3.0	The Required Sample Size for the Research with regard to Studying Program	114
3.1	The research Questions and Methods of Data Analysis	119
3.2	Demographical Factors of Respondents in the Pilot Study	134
3.3	KMO and Bartlett's Test of the Pilot Study	137
3.4	Communalities for the Items of the Pilot Study	138
3.5	Total Variance Explained for the Items of the Pilot Study	139
3.6	Pattern Matrix of Factor in the Pilot study	141
3.7	The Name of the Factors with Explained Variance in the Pilot Study	143
3.8	Reliability Analysis of the Unconscious factors in the Pilot Study	143
4.0	Demographical Factors of Respondents in the Research	146
4.1	KMO and Bartlett's Test of Sphericity for the Research	149
4.2	Communality Matrix for the Items of the Research	150
4.3	Total Variance Explained for the Items of the Research	151
4.4	Pattern Matrix of Factors in the Research	153
4.5	Structure Matrix of Factor in the Research	154
4.6	Independent Samples <i>T</i> -test for Males and Females on the Factors Underlying Their Thinking Processes	157
4.7	Test of Homogeneity of Variances for ANOVA	158
4.8	ANOVA for Age Groups of the Respondents on Factors Underlying Their Thinking Processes	159
4.9	Independent Samples <i>T</i> -test for Malay and Non-Malay on the Factors Underlying Their Thinking Processes	160

4.10	Independent samples <i>T</i> -test for Muslim and Non-Muslim on Factors Underlying Their Thinking Processes	161
4.11	Chi-Square test for Genders on Selecting the Choices	164
4.12	Chi-Square test for the Age Groups on Selecting the Choices	165
4.13	Chi-Square test for the Ethnic Groups on Selecting the Choices	166
4.14	Chi-Square test for the Groups of Religion on Selecting the Choices	167
4.16	Descriptive Statistic of Students' Justification for Desirable and Undesirable Reasons	168

**LIST OF FIGURES**

<b>FIGURE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
1.0	The Unconscious Thinking Processes	21
2.0	Structure of The Unconscious Mind	42
2.1	An Inkblot Similar to Those Used in the Rorschach Test	69
2.2	A Picture Used in the Thematic Apperception Test	70
3.0	Data Gathering from Mixed Method in the Research	112
3.1	The Words-Stimuli of the Research	116
3.2	Factor Analysis Decision Diagram for the Pilot Study	136
3.3	Scree Plot of Items in the Pilot Study	140
4.0	Factor Analysis Decision Diagram for the Research	147
4.1	Scree Plot of Items in the Research	152

**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
A	Research Instrument Validation	218
B	Questionnaire on The Unconscious	
	Thinking processes of Students	220
C	Questionnaire Students Unconscious	
	Thinking Processes in Preliminary Survey	226

## CHAPTER 1

### INTRODUCTION

#### 1.0. Introduction

One of the main purposes of education is to change and develop the ways by which students think and behave. This purpose considers students as those who are capable of controlling their cognitive and behavioral activities, as who are consciously aware of thinking and learning processes. Therefore, students are required to learn consciously how to think in order to perform their cognitive activities satisfactorily. However, most of the thinking and learning activities are very complex for conscious processes of the human mind and human memory to discern, but not for their unconscious processes. Thus, psychologists propose instructors considering students as ones who learn not only consciously but also unconsciously, so that more satisfactorily results may be produced.

Thinking and learning are being practiced by reasoning, making decisions, solving problems (Skinner, 1989; Wang and Ruhe, 2007), and giving meanings to daily life (Moseley *et al.*, 2005; Paul *et al.*, 2008) as the process of editing, rearranging, and examining the world (Moore, 2005; Hoare, 2006). Hence, the more students know both conscious and unconscious processes of thinking and learning, the better they optimize their thought and behavior. Thinking processes of students mediate the effects of teaching and learning in class (Marland and Edwards, 1986). The efficiency of thinking is being improved by teaching students how to think (Goodrum, 1979; Borich, 1996; Smith, 2003; Anat, 2004; Yaman, 2005; Çubukcu, 2006), because students learn well while thinking well (Hall *et al.*, 2008).

In educational context, thinking is conceived as a disposition and aim-focused or consciously goal-directed cognitive process (Ertepinar, 1995; Çubukcu, 2006; Moore, 2005). Educational psychologists assume that students are conscious of the relationship between their skills, tasks, and the demands made by their school. Students are seen as capable partners who think along with their teachers (Luc *et al.*, 2001; Moseley *et al.*, 2005). Accordingly, instructional varieties offer students conscious learning (Borich, 1996) and strategies that may make them active participants in their learning processes (Eggen and Kauchak, 1998; Kosnin, 2007; Slavin, 2003, 2009).

Thinking refers to the development of higher order thinking as a distinct educational goal not just for students but also for teachers (Smith, 2003; Anat, 2004), because explaining one's thinking to another mutually leads to consciously cognitive processing (Sullivan, 1998). Teachers and students affect each other's behaviors at the underlying processes of thinking (Robertson, 1999), which are asserted to be mostly unconscious or relatively conscious (Freud, 1915c; Moseley *et al.*, 2005).

According to Freud (1915b), the unconscious is the real cause underlying thinking processes. The unconscious refers to the memory of prior events, experiences, emotions, and feelings that may or may not be available for conscious awareness (Roeckelein, 2006). Thinking and making inferences, relied on students' experiences, are conceived as "learning," if their experiences change their behavior (Slavin, 2003, 2009). Experience and learning are cumulative processes in life. Therefore, vicissitudes of one's experiences are proposed not only to be leaned on past and present conscious, but also on unconscious experiences.

As a result, thinking and learning processes are considered as derivative of consciousness, while past studies showed that learning and thinking processes are also derivative of unconscious processes. Most traditional approaches consider students as they are conscious learners, who are aware of their thinking and learning processes, but the unconscious side of their thinking, which is proposed to be more effective, are neglected (Thompson, 2004; Hoare, 2006; Meissner, 2008). This negligence results in inability to deal with teaching students how to think (Debono,

1983; Borich, 1996). It indicates that teaching and learning processes can be improved, if unconscious processes are taken into consideration.

This study used a close-ended questionnaire based on a word-stimuli in order to investigate what factors might underlie thinking processes of students, particularly unconscious factors of thinking. Students were required to make a choice, stating and justifying their reasons. This was done in order to reveal the factors that may have affected them when they made a choice.

### **1.1. Problem Background**

In terms of education, thinking is composed of aim focused cognitive processes such as reasoning, problem solving, decision making, and justification which are the universal goals of education in teaching students how to think (Borich, 1996; Gray *et al.*, 1999; Smith, 2003; Anat, 2004; Moseley *et al.*, 2005). Reviewed studies showed that students, at all levels, are not aware of the thinking processes and they have limited knowledge on how thinking can be developed (Goodrum, 1979; Marland and Edwards, 1986; Borich, 1996; Anat, 2004; Moseley *et al.*, 2005; Sladek *et al.*, 2008). Therefore, the educational goals require educators to know how thinking processes work, and how these processes can be developed, so as to recognize how learners think as well as how they behave or act (Goodrum, 1979; Marland and Edwards, 1986; Borich, 1996; Anat, 2004; Thompson, 2004; Sladek *et al.*, 2008).

Some studies have found that students are incapable of understanding complex issues; their problem solving, making decision and reasoning processes are not compatible with norms of rationality, because schools had lost sight of their role in teaching students how to think (Borich, 1996; Smith, 2003). Others suggest a right structure for teaching how to think, so as to enhance logical, structural and critical thinking skills of students (Kirkley, 2003; Jordaan and Jordaan, 2005). Moreover, educational psychologists do not have an exact claim about that if thinking is inherently rational, optimal, desirable, or even smart (Holyoak and Morrison, 2005).



Several presidential commissions in America called for a commitment to develop a “thinking curriculum” that focuses on teaching learners how to think critically, how to reason, and how to solve problems (Borich, 1996). Students are required to use these thinking activities in both the real world and educational context to gain admittance to advanced education and living opportunities (Borich, 1996). Likewise, the explicit mention of developing students’ rational, critical and creative thinking has necessitated the teaching how to think in Malaysia (Nagappan, 2001). Since 1980, numerous short courses and workshops on teaching thinking such as ‘Accelerated Learning’, ‘Optimal Learning’, ‘Critical and Creative Thinking’ (Nagappan, 2001) have been conducted to prepare teachers and college lectures. Curriculum Development Center of Malaysia (1989) has indicated that:

*“The contents of the curriculum promote the development of thinking abilities to enable students to analyze, synthesize, explain, draw conclusions, and produce ideas that are both constructive and useful. Every teacher is required to use teaching-learning methods and techniques which will stimulate, encourage, and develop the thinking abilities of students (p.6)”*

The former Director-General of Malaysian Education Datuk Matnor Daim suggested that students have to learn to maneuver ideas and feelings by acquiring thinking skills, and teachers should make it their responsibility to mold students into thinking leaders (Nagappan, 2001). The Minister of Education in Malaysia (Nagappan, 2001) also stated that the education system will be revamped to encourage analytical thinking like the capacity for precise and rational thought, training in basic logic, reasoning and critical thinking as they are essential for all students. Teacher Education Division in Malaysia has proposed these five components in lessons which are (Nagappan, 2001):

- 1) introduction to content and process,
- 2) thinking about thinking,
- 3) thinking actively,
- 4) consolidation or enrichment activities,
- 5) applying thinking in all colleges in Malaysia.

Thus, students can optimize their performance by being taught how they think in their learning process, and how it affects their works (Clark and Paivio, 1991; Pavioi, 1991).

According to Paul *et al.* (1998), a cornerstone of students' thinking and learning experiences is their critical thinking skills that accord their interactions between thinking, learning, and behavior in educational and social contexts. These interactions construct past and present experiences of students (Teremzini *et al.*, 1995; Sternberg, 2003; Çubukcu, 2006), thereby imposing meaning on students' perception, belief, and understanding level of students that transcend the literal information acquired (Schunk and Zimmerman, 2003). Therefore, critical thinking is supposed to be a way to perceive the world and formulate well-reasoned meanings and conclusions (Çubukcu, 2006), which are applicable and reliable as a self-regulating processes (Kosnin, 2007).

Critical thinking is aim focused intellectual processes in available information (Paul *et al.*, 2008). According to Moore (2005), this is the kind of thinking skill to teach students how to organize and distinguish between the ways they perceive the world whereby they distinguish between guessing and estimating, believing and assuming, preferring and evaluating, supposing and hypothesizing, interfering and interfering logically, grouping and classifying, associating concept and grasping principle, noting relationship and noting relationships among relationships, offering opinions without reasons and offering opinions with reasons, and distinguishing between making judgments without criteria and making judgments with criteria. These thinking processes entail the ability to recognize the fallibility of one's own opinions (Sa *et al.*, 1999; Çubukcu, 2006), that is a kind of meta-cognition for focusing on the real problem or decision to be taken with credibility based on conscious awareness (Moore, 2005; Lovrek *et al.*, 2008).

According to Goodroom (1979), critical thinking is underlying factor of scientific thinking that is milestone of school science courses. Both, critical and scientific thinking are not separable from education (Yürümezoğlu and Oğuz, 2007).

They are developed in instructional context (Yaman, 2005) within those thinking activities which are (Teremzin *et al*, 1995; Moore, 2005):

- a) *Inference making*. It requires rational thoughts as personal beliefs about a situation based on similar associations with past experiences.
- b) *Logical thinking*. It needs an idea or assumption to arrive step-by-step at end point or solution based on previous knowledge or on acquired of patterns of thinking.
- c) *Problem solving*. It involves a problem and making decision process with steps of defining problem, collecting data, identifying obstacles to the goal (Zanga *et al*, 2004), identifying alternatives, rating alternative, and choosing the best alternative.
- d) *Decision making*. It calls for choosing the fittest response from several choices according to examining advantages and disadvantages, considering all the steps of problem solving and evaluating the final decision in relationship to available alternatives and consequences,
- e) *Interpretation*. It requires perception in examining the assumptions when making a judgment or reaching a conclusion. Perceptions are developed through associations with personal experiences and are, therefore, unique to each individual.
- f) *Analysis*. It examines the problem to be solved, identifies the elements of the problem, and finds relationships between the elements.

Abovementioned thinking activities are supposed to make students sophisticated thinkers who apprehend their cognitive tasks that enhance their perception of reality (Smith, 2003). According to Çubukcu (2006), definition of thinking involves some characteristics or dispositions of it as follows:

- enabling people to use information masterly and objectively,
- stating the organized thoughts in a brief,
- differentiating logically valid and invalid results,
- understanding the belief and degrees of thoughts,
- seeing vague and unclear similarities and differences,
- understanding the differences of being right and wrong,
- accepting that a problem has different ways to the solution with internally valid justifications,
- distinguishing the differences between hypotheses and assumptions,
- being sensitive towards the differences between the accuracy and strength of a belief,
- showing distinctively different aspects of a an issue without exaggerating, categorizing or changing.

Accordingly, abovementioned characteristics of thinking are aim-focused cognitive processes that can be taught directly (Çubukcu, 2006). The efficiency of these cognitive processes can certainly be improved in making students understand events, making decisions, and in solving problems (Çubukcu, 2006; Moseley *et al.*, 2005; Hoare, 2006). Thus, educational psychologists propose that students are in control of their thinking and learning processes (Borich, 1996; Luc *et al.*, 2001; Moseley *et al.*, 2005; Slavin, 2003, 2009).

However, what students think while learning (i.e. there is shifts in the level of information processing and split-attention that learners are either unaware of, or unable to articulate the reasons for them) is not revealed optimally (Marland and Edwards, 1986). In learning processes, students have tendency to react according to their needs, which guide their motivation (Moore, 2005) and influence their thinking processes (i.e. goals, preferences) in attaining desired outcomes (or avoid undesired outcomes) (Holyoak and Morrison, 2005; Moseley *et al.*, 2005). This influence is attributed to the unconscious processes (Holyoak and Morrison, 2005).

Although both contemporary and classic psychological studies have evidenced that human thinking is operated by both conscious and the unconscious processes (Freud, 1915b, 1933, 1949; Libet *et al.*, 1991; Libet, 1999; Velmans, 1999; Westen, 1999; LeDoux, 2000; Thompson, 2004; Mijolla, 2005; Kihlstrom, 2006, 2008; Moors and DeHouwer, 2006; Baumeister, and Bushman, 2008; Bargh and Morsella, 2008; Meissner 2008), the unconscious processes are constantly active or automatic (Baumeister, and Bushman, 2008), and preceding conscious one (Freud, 1915b, 1921, 1933, 1949; Libet *et al.*, 1991; Libet, 1999; LeDoux, 2000; Kihlstrom, 2006, 2008; Thurschwell, 2009). There is no evidence showing a vice versa state in favor of conscious processes (Libet, 1999; Velmans, 1999).

Conscious processes are posited to be limited in information processing, whereas the unconscious processes are limitless and accommodating the limitation of conscious processes as much as possible (Lewicki *et al.*, 1992; Churchland, 1995; Sternberg, 2003; Slavin, 2003, 2009; Bargh and Morsella, 2008, Gilholey, 2008). Accordingly, Freud (1900, 1911, 1915b, 1920b, 1933, 1940; Erdelyi, 2006) correctly recognized that every psychical act of human beings begins unconsciously that may either remain so or go on developing into consciousness. Thinking processes are instigated by the unconscious mind that makes the conscious mind relatively conscious (Freud, 1915b; Thompson, 2004) in determining whether an information is to be kept in mind or to be discharged (Slavin, 2003, 2009). In terms of social (Rerber, 1989) or formal learning, transference of information is argued to be by the unconscious rather than conscious processes (Robertson, 1999).

Consequently, the unconscious thinking processes can instigate learning processes to occur (Freud, 1915b, 1933; Thompson, 2004; Hoare, 2006). However, most of the instructional objectives offer to students only learning consciously (Borich; 1996) that consider students as they are conscious of their thinking and learning processes (Thompson, 2004; Hoare, 2006; Meissner, 2008). Reviewed studies show that neither the students are consciously aware of their thinking processes itself, nor the teachers perfectly possess the knowledge of how thinking works (Marland and Edwards, 1986; Thompson, 2004; Moseley *et al.*, 2005). Only after an event happened, they can reflect on the outcome of their thinking, thereafter

reconstruct and analyze their thinking processes (Moseley *et al.*, 2005). Thus, educational objectives always neglect the unconscious processes, although its significant effects are observable in learning (Thompson, 2004; Hoare, 2006; Meissner, 2008). This negligence prevents educators from well understanding of how thinking process works that leads to ineffectiveness of teaching students how to think (Debono, 1983; Borich, 1996). It indicates that teaching and learning cannot be properly studied and they cannot be improved unless unconscious processes are taken into consideration (Thompson, 2004; Hoare, 2006).

## **1.2. Problem Statement**

The literature shows that students at all stages are unable to think effectively in their thinking activities (Borich, 1996; Smith, 2003). Yet, teaching students how to think is resulted in ineffectiveness. This ineffective teaching attributed to neglecting the unconscious processes in teaching and learning activities (Debono, 1983; Borich, 1996; Thompson, 2004; Holyoak and Morrison, 2005 Hoare, 2006; Meissner, 2008) and to restricted knowledge of teachers and learners on how thinking processes work and how thinking can be developed (Goodrum, 1979; Marland and Edwards, 1986; Borich, 1996; Anat, 2004; Sladket *et al.*, 2008). Freud (1915b, 1933) propounded that thinking processes work unconsciously; the unconscious is the only mental process and the real psych underlying any cognitive processes.

Therefore, this study intended to investigate how thinking processes work in the light of the unconscious factors (i.e. unconscious association, repression, rationalization) that might underlie students' thinking activities (i.e. making decision, reasoning, justifications).

### **1.3. Purpose of Research**

This research attempted to provide a lens through which one can get a better view on the question of how thinking processes work. It purposed to display the unconscious processes of thinking in a conspicuous place where instructors teach students how to think. The relationship between the unconscious factors of thinking processes and demographical factors of students was explored. It also intended to open an initiative angle view for a prospective research on the possible advantages of using the unconscious in teaching and learning contexts, for both instructors and the learners.

### **1.4. Research Objectives**

The objectives of the research are:

- i. To investigate factors such as “unconscious association, repression, rationalization” that may underlie students’ thinking activities such as “making decision, reasoning and justification.”
- ii. To determine the differences between demographical factors of the students (gender, age, ethnic, religion) at the factors (unconscious association, repression, rationalization) underlying their thinking processes.
- iii. To identify the relationship between demographical factors of the students (gender, age, ethnic, religion) and their selection of the choices (1- Career, 2- Satisfaction, 3- Career and Satisfaction).

### **1.5. Research Questions**

- i. What are the factors underlying the thinking processes of students?
- ii. Is there any difference between demographical factors of the students at the factors underlying their thinking processes?
- iii. Is there any relationship between demographical factors of the students and their selection of the choices?

### **1.6. Significance of Research**

A universal goal of education is teaching students how to think (Smith, 2003; Anat, 2004). The essence of education and its design is developing and disciplining the mind, hereby generating a person who thinks, acts, and behaves in plausible ways (Connell *et al.*, 1972; Tobin and Capie, 1981). Thus, the educational goal of teaching how to think necessitates to study on how thinking processes work (Goodrum, 1979; Marland and Edwards, 1986; Borich, 1996; Anat, 2004; Sladket *al.*, 2008) in regard to unconscious and conscious factors of it.

American educational policies and educational philosophy of Malaysia consider thinking ability as an instructional necessity to be taught. American educational policies, through a commission, has recognized the importance of, "the development of the ability to think", as the central purpose of education (Niaz and Robinson, 1993). The commission called for a commitment to developing a "thinking curriculum," one that focuses on teaching learners how to think critically, reason, and problem solve in real-world context (Borich, 1996). It points at the awareness of students which is essential for thinking skills, so as to base on evidence rather than beliefs, desires, and biases, so called "scientific awareness" that has long been a goal of and quality of science education (Niaz and Robinson, 1993; Yaman,



2005; Lovreket *et al.*, 2008; Paul, 2008). For this goal, some of the Malaysian educational institutes have already formed several courses for teaching thinking skills because of the necessities (Nagappan, 2001). An aspect of educational philosophy of Malaysia is to qualify their students with high thinking ability (Curriculum Development Center, 1989; Educational Planning and Research Division, 1994; Nagappan, 2001).

Students are suggested to understand how mind works, so as to use their thinking activities effectively (Sladeket *et al.*, 2008), and to gain higher order thinking skills for being effective in their life (Kirkley, 2003). They are recommended to be familiar with essential mental activities such as memory, perception, attention, reasoning, judgment, and imagination (Smith, 2003), and to gain critical thinking skills whereby they can analyze their thinking activities as a kind of meta-cognition for focusing on a real problem or making a choice (Lovrek *et al.*, 2008). This is because both mental and cognitive activities together support the purpose of instructional planning that is to raise conscious level of thoughts, feelings, and understandings of students (Borich, 1996), if students be familiar of their conscious and unconscious processes (Marland and Edwards, 1986; Tribus, 2004; Moseley *et al.*, 2005). Particularly, the unconscious processes are suggested to be considered in education (Thompson, 2004), because the conscious processes are very short compared with the entire human system capacity (Dijksterhuis and Nordgren, 2006). Although, unconscious learning is difficult to be studied, its effect is amenable to scientific observation (Hoare, 2006).

### **1.7. Scope of Research**

According to literature, teaching students how to think is one of the educational goals to provide students with efficient use of their thinking abilities and learning skills. Thinking and learning processes are underlain by conscious and unconscious cognitive activities. In term of unconscious learning, a student's perception is posited to be affected by their past experiences.

Accordingly, the population of this study was the students who have already gone through educational experiences. Therefore, the samples of the study were master degree students from the Faculty of Education at University Technology Malaysia. The students' cognitive level is presupposed to be experienced conscious or unconscious processes of thinking (Freud, 1915b, 1933, 1949; Hoare, 2006). Stratified random sampling with a mix-mode method was used to find out the effects of the unconscious in thinking processes.

As a result, this study purposed to investigate what factors might affect thinking processes in selecting the choices of their reasons to study. The conscious, unconscious, and demographical factors are assumed to be effective in thinking. This study used a descriptive approach to understand whether students are affected by the factors. The choices were assumed to be unconsciously associated with desirable and undesirable thoughts that may be revealed through instrument.

## **1.8. Definition of Terms**

Key concepts of the study are defined below, in order to familiarize the reader with their conceptual meanings for the purpose of the study. Each concept is abstract and has abundant character, hence the researchers prefer to introduce most important characters of them, rather than define them in a single character.

### **i. Conscious and Conscious Processes**

Conscious is the working memory itself (Churchland, 1995; LeDoux, 2000). According to Libet (1999), conscious comes after unconscious processes, hence conscious process is awareness of unconsciously initiated actions (Libet, 1999) that contain all thoughts, feelings, and perception of human beings (Freud, 1933; Statt, 2003; Larsen and Buss, 2008; Salkind, 2008). Thus, conscious processes are immediate apprehension of mental activities (Statt, 2003), and conscious is the

awareness of one's being (Statt, 2003) “oneself” or “ego” (Mijolla, 2005). When the “ego” or “self” is being mentioned, then conscious is sequel of “self” because any mental action is determined by inherited archetypal forms (Fordham, 1980, 1981).

In this study, conscious and conscious processes refer to the awareness of oneself that is only able to distinguish between what is desirable and what is undesirable (Freud, 1900, 1915c, 1920a; Mijolla, 2005), but not able to know “how to determine” and “what determines” pleasure and unpleasure one.

## **ii. Instinctual Drive**

According to Freud (1915a), the whole flux of mental life bases on demands of instinctual drive. Every origin and representatives of the instinctual drives are innate in humans’ physical construct and appears in their thoughts (Freud, 1915a). Instinctual drives are considered as the psychical representative of stimuli from inner process of human beings reaching the mind. It is known as a determinative demand made upon the mind, in consequence of its relation with the organism, for operation (Freud, 1915a, 1933).

## **iii. The Unconscious**

According to Freud (1915c, 1920b, 1933), the unconscious is the real psych, and imperfect reports of psychical operation to human beings (such as a demand of instinctual drive) that comes through the data of sensory organs (consciousness). Reported unacceptable thoughts and memories may have been pushed back or repressed because of their threatening nature to consciousness, but they still can affect any mentation (Freud, 1915c). Mentation may have inherited archetypal forms as a system that unconsciously determines any mental action (Fordham, 1980, 1981). According to Lacan (1977), a mantel action is operated through symbol-image or

mental representation that is the structure of language and the unconscious is structured like language.

This study used the concept of the unconscious that implies mentally represented psychic conflicts, which ensues from opposition of pleasure and tension, or what is desirable and undesirable. The unconscious is constantly active and dynamic factor in any mentation. It pushes back or represses unacceptable thoughts and memories, because of their threatening nature to consciousness, while they still affect any mentation (Freud, 1915c).

In this study, the concept of “the unconscious” is preferred to use instead of “unconsciousness” or “unconscious processes” (as mentioned later in the literature review) to call attention on cooperation of instinctual drives with pleasant and unpleasant past experiences stored in the mind. The researcher presumed that instinctual drives exist at the present time, but the experiences are either in the past or in present. Hence, drives are like the energy for a network of mind-body unions in which pleasant or unpleasant past experiences are associated with current experiences in the unconscious mind. This presumption refers to the assertion of Freud that the dynamic power of unconscious comes from drives and instincts on mental representation (Freud, 1915b, 1933; Haydn, 1951).

#### **iv. The Unconscious Thinking Processes**

Demands of humans’ instinctual drive (i.e. hungry, thirst, sex, self-preservation etc.) on their mind, to fulfilling basic needs, engender psychic energy (Freud, 1915a, 1933). Initially, humans’ psychic energy ensues from their instinctual drives that determine the tendency of their thinking activities according to desired and undesired experiences in the mind (Freud, 1915b, 1933; Haydn, 1951). Later, the psychic energy derivate from both the human mind and instinctual derives as life experiences are gained. Humans’ undesired experiences become propelling psychic energy, whereas their desired experiences become attractive one in each psychic

activity that molds their mind-set. The mind-set can be conceived as unconscious mental attitude of people to think about their experiences with regard to what is desirable and undesirable for them.

Thus, the unconscious thinking processes can be conceived as the human unconscious mind-set that is propelled by undesired experiences and attracted by desired ones. This human unconscious mind-set determines how human beings respond to their experiences, but not what they respond to, because what desirable is can be transformed to undesirable one, and vice versa.

#### **v. Unconscious Association**

Instinctual drives associated with mental representation inherently that has associative nature to serve pleasurable and avoid unpleasurable experiences (Freud, 1915a; Westen, 1999, 2006; Lear, 2005). Associations do not take any particular relation to reality. Along with networks of association any information is encoded in memory and being activated unconsciously, regardless they can affect thoughts and behaviors, or they are conflictual (Westen, 1999).

According to Freud (1900), totality of sensory stimuli arouse in the mind in the first place a number of ideas which are derivative of external and internal stimuli become linked together according to the laws of association and that call up a further series of ideas (or images). Accordingly, the realities of the world are taken into consideration in thinking processes while looking for pleasure and desire-fulfillment (Freud, 1900) regardless of the limits forced by reality (Freud, 1933, Talvitie and Ihanu, 2005). Hence, it may involve repression, anxiety or rationalization that deal with unconscious processes in activities of desire-fulfillment.

**vi. Rationalization**

Rationalization is an unconscious defense to create socially acceptable reasons for an action that actually reflects unattractive motives (Salkind, 2008). In rationalization, the goal is to reduce tension by coming up with explanation for an event that is more easily acceptable than the real reason.

**vii. Repression**

Repression is conceived to be a defense processes in which one prompted to gratify basic drives immediately, and avoid undesirable experiences (Freud, 1915c). Repression is a process of preventing undesirable, repressed, and currently experienced thoughts, feeling, or urges from reaching conscious awareness.

**viii. Thinking and Thinking Processes**

Thinking is conceived to be a deliberate attention given to particular aspects of experiences (Moseley *et al.*, 2005). In educational contexts, thinking is used to mean a consciously goal-directed process (Zhang, 2006), such as imagining situations, remembering, forming concepts, considering opinions, generating new perspectives, planning behaviors, reasoning, problem solving, making decision and judgments (Gray *et al.*, 1999; Moseley *et al.*, 2005). Thus, thinking processes may be conceived as mental representation integrating the relationship between objects and experiences, and transferring them from outer world into symbols (Çubukcu, 2006), so as to reach its aim.

## 1.9. Theoretical Framework

A basic issue in studying cognitive processes involves both conscious and unconscious factors of psychological actions. The questions to be directed in this issue is how people perceive the world, whether consciously or unconsciously; and how they practice their thinking ability to reason, make decisions, give meanings to their experiences, and examine the world. Experimental evidences show that people make associations to images, symbols or words that interplay between their attitudes, life experiences, and distinctive personality characteristic (Cohen and Swerdlik, 2010).

According to “*the unconscious mind theory of Freud*” (1900, 1911, 1915b, 1920b, 1933, 1940), that is refereed in this theoretical framework, every psychological act of human beings is instigated unconsciously. Therefore, human consciousness is relatively conscious, because it operates unconsciously started psychic actions (Freud, 1915b; Thompson, 2004). According to Freud (1915b), the unconscious mind is the real cause that underlies thinking processes, and it determines whether perceived information is to be kept in mind or to be discharged (Slavin, 2003, 2009).

According to Freud (1900), perceived information arouses a number of ideas in the human mind by the laws of association that call up a further series of ideas out of consciousness of human beings. This unconscious association refers to humans’ past and present experiences (i.e. emotional or affective) that may or may not be available for conscious awareness (Roeckelein, 2006). Freud (1900, 1933) asserted that this unconscious association deals with realities of the world in terms of instinctual demands for pleasure and desire-fulfillment regardless of the force of reality. Freud (1920a, 1949) propounded that the sense-organs of human beings report realities of the external world to their mind incompletely, because these realities are molded according to what are desirable and undesirable in their consciousness. Therefore, reality of the external world is unknown; the unconscious is the only true psychic reality.

Consciousness is as an intention to attain a goal that governs the flow of thought processes when intended goal is in focal conscious awareness. Nevertheless, one cannot consciously decide to change this goal and seek to establish a reverie or meditative state. This switch in mind-set is a way of either clearing the mind for relaxation or getting in touch with extended meanings of a goal by allowing a broader network of association and organization by multiple, diverse schemas (Horowitz, 1988). While the sequence of ideas may feel random, it is actually determined by unconscious intentions and schemas for processing information, and for thinking processes (Crook, 1980).

The unconscious thinking processes, investigated in this study, are respectively and relatively depicted in Diagram 1.0. This diagram attempted to show how the unconscious mind theory deems that people may not think of what they perceive is unconsciously divided into their desirable and undesirable experiences, which navigate their thinking processes through desirable and undesirable thoughts. A word, as a stimulus, can easily evoke what is desirable and what is undesirable experience of human beings out of their conscious control and awareness. People relatively think of what is pleasurable or unpleasurable for them, but they do not know “why or how” they perceive it in this way.

Human beings unconsciously associate a word stimulus with their mental representation of their past or prospective experiences. They unconsciously prevent or repress their unpleasant or unacceptable experiences from entering their conscious awareness, wherein a conflict between acceptable and unacceptable experiences emerges. Hence, they are presupposed to use one of the unconscious defenses to avoid tension, ensued from this conflict, by which they can create excuses or reasons that are socially or individually acceptable for their decision, thoughts, beliefs, feelings, and behaviors. This case is presupposed to be suited to definition and description of unconscious defense of rationalization.

Diagram 1.0 illustrates the unconscious thinking processes, in unobserved manner, unconscious association might precede repression, and repression might precede rationalization. However, in observed manner, these unconscious processes

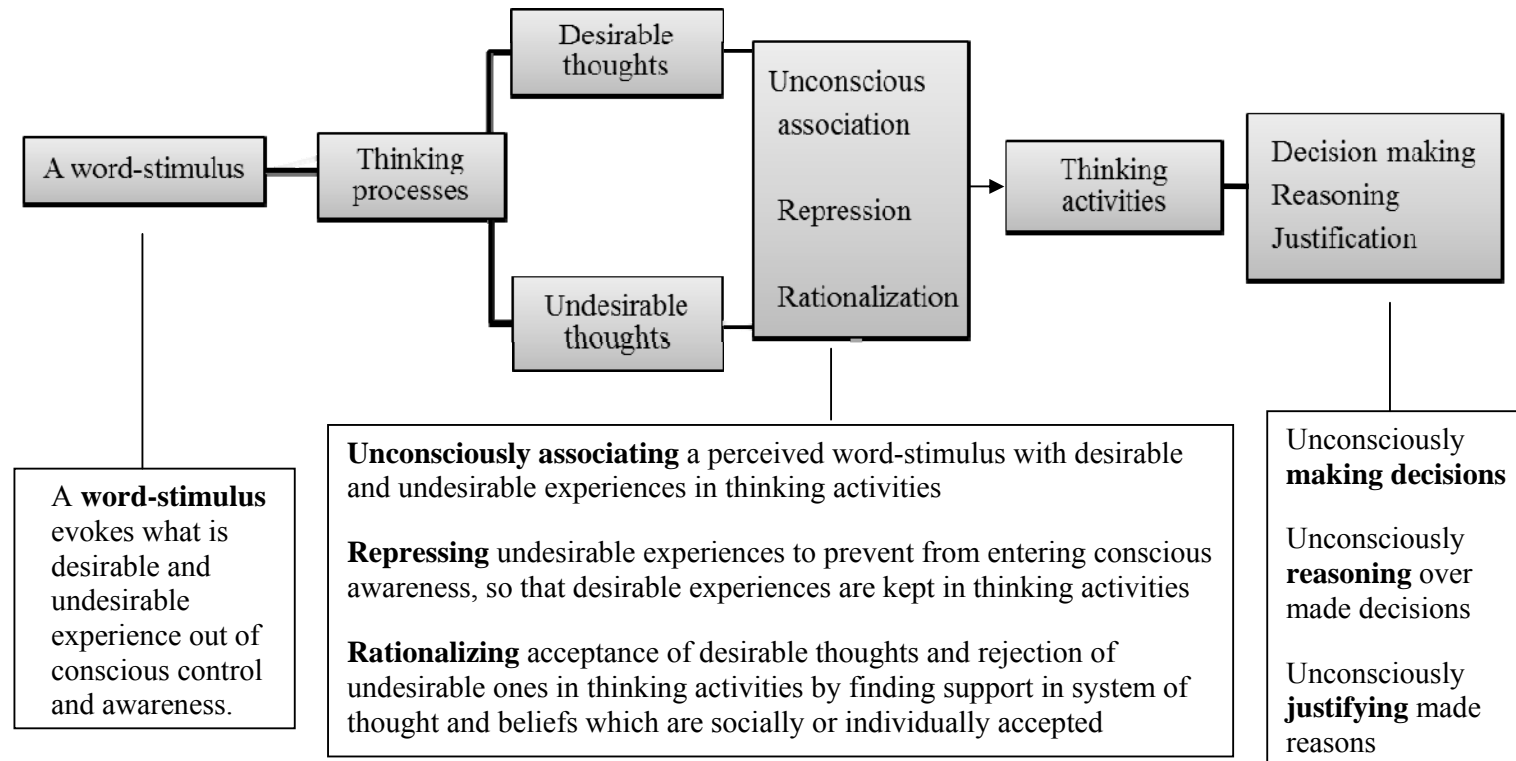


might be ordered vice versa, indicating that rationalization might precede repression and repression might precede unconscious association. Theoretically, undesirable and desirable thoughts (experiences) are assumed to emerge in parallel rather than in order. However, in practice (in observed manner), undesirable thoughts can be observed prior to desirable one or vice versa depending on the level of satisfaction or the mood of a person. This is because the unconscious thinking processes operate at the same time in associating perceived stimulus with desirable and undesirable experiences. However, it only can keep either desirable or undesirable one in thinking activities; cannot do it at the same time.

### **1.10. Conclusion**

This study is important in order to know how students process their thinking activities. Through the selected research questions, it was hoped that the study will yield various issues underlying thinking process of students in regard to differences between what they know and how they know. Students might be able to give reasons of their behavior by drawing conclusions and justifying them. However, the students might not be able to show how they determine what they exhibit as their reasons, that is, they might not be able to point what process they have gone through to reach decisions based on the reasons they made. Students are able to consciously show what the result of their thinking process is by pointing at it, but they are unlikely to be able to show how they process their thinking to reach what they show as a result.

## The Unconscious Thinking Processes



**Figure 1.0** The Unconscious Thinking Processes

## REFERENCES

- Akopov, G.V. (2009). The Problem of Consciousness in Russian Psychology: The Unitary and Interdisciplinary Approaches. *Journal of Russian and East European Psychology*, 47(5): 3–25. English translation by M.E. Sharpe.
- Anat, Z. (2004). Elements of Teachers' Pedagogical Knowledge Regarding Instruction of Higher Order Thinking. *Journal of Science Teacher Education*, 15(4): 293-312. Netherlands. Kluwer Academic.
- Anderson, J.R. (1983). *The architecture of cognition*. Cambridge, Massachusetts. Harvard University Press.
- Anderson, S., Glassman, N.S., Chen, S., and Cole S.W. (1995). Transference in Social Perception: The Role of chronic Accessibility in Significant-Other Representations. *Journal of Personality and Social Psychology*, 69(1): 41-57.
- Arkes, H.R., and Garske J.P. (1982). *Psychological Theories of Motivation*. (2<sup>nd</sup> ed.) U.S.A. Brooks/Cole.
- Armstrong, J.S. (1967). Derivation of theory by means of factor analysis or Tom Swift and his electric factor analysis machine. *The American Statistician*, 21: 17-21.
- Arndt, J., Allen, J.J.B., and Greenberg, J. (2001). Traces of Terror: Subliminal Death Primes and Facial Electromyographic Indices of Affect. *Motivation and Emotion*, 25(3): 253-277.
- Arndt, J., Greenberg, J., Pyszczynski, T., and Solomon, S. (1997). Subliminal presentation of death reminders leads to increased defense of the cultural worldview. *Psychological Science*, 8: 379-385
- Arndt, J., Solomon, S., Kasser, T., and Sheldon, K.M. (2004). The Urge to Splurge: A Terror Management Account of Materialism and Consumer Behavior. *Journal of Consumer Psychology*, 14(3): 198-212
- Atkinson, R.C., and Shiffrin, R. M. (1971). The Control Processes of Short-Term Memory. *Technical Report-Psychology Series*, 173. Institute for Mathematical Studies in the Social Sciences, Stanford University, California.

- Aydın, K.B. (2009). Automatic thoughts as predictors of Turkish university students' state anxiety. *Social behavior and personality*, 37(8): 1065-1072.
- Baker, G.P., and Hacker, P.M.S (1980). *Wittgenstein: Understanding and Meaning- An Analytical Commentary on the Philosophical Investigations* (Vol.1) Oxford:Blackwell.
- Banks, W.P., and Farber, I. (2003). Consciousness. In Weiner, I. B. (Ed.). *Handbook Of Psychology: Experimental Psychology*, 4: 3-26. New Jersey. John Wiley & Sons.
- Bargh, J.A., and Chen, M. (1999). Consequences of Automatic Evaluation: Immediate Behavioral Predispositions to Approach or Avoid the Stimulus. *PSPB*, 25(2): 215-224. Society for Personality and Social Psychology.
- Bargh, J.A., and Morsella, E. (2008). The Unconscious Mind. *Perspectives in Psychological Science*, 3(1): 73–79.
- Bargh, J.A., and Ferguson, M. J. (2000). Beyond behaviorism: On the automaticity of higher mental processes. *Psychological Bulletin*, 126(6, Sp Iss):925-945.
- Bargh, J. A., and Chartrand, T.L. (1999). The Unbearable Automaticity of Being. *American Psychologist*, 54(7): 462-479.
- Bassett, J. F. (2007). Psychological Defenses Against Death Anxiety: Integrating Terror Management Theory and Firestone's Separation Theory. *Death Studies*, 31: 727–750. Taylor & Francis
- Baumeister, R.F., and Bushman, B.J. (2008). *Social Psychology and Human Nature*. (International student Edition). U.S.A: Thomson Wadsworth
- Bayer, B.K. (1987). *Practical strategies for the teaching of thinking*. Boston, U.S.A. MA: Allyn and Bacon.
- Bentler, P.M., and Kano, Y. (1990). On the equivalence of factors and components. *Multivariate Behavioral Research*, 25: 67-74.
- Best, J.B. (1999). *Cognitive Psychology*. (5<sup>th</sup> ed.) U.S.A. Wadsworth.
- Blanco, M.J., and Soto, D. (2009). Unconscious perception of a Xash can trigger line motion illusion. *Exp Brain Res*, 192: 605–613.
- Bogdan, R.C., and Biklen, S.K. (2003). *Qualitative Research for Education: An introduction to Theories and Methods*. (4<sup>th</sup> ed.). New York: Pearson Education.

- Bogdan, R.C., and Biklen, S.K. (1998). *Qualitative research in education: An introduction to theory and methods*. (3rd ed.). Needham Heights, MA: Allyn & Bacon.
- Borich, G.D., (1996). *Effective Teaching Methods*. (3<sup>rd</sup> ed.) USA. A Simon & Schuster. Prentice-Hall.
- Bos, M.W., Dijksterhuis, A., Rick, B., and Baaren, V. (2008). On the goal-dependency of unconscious thought. *Journal of Experimental Social Psychology*, 44: 1114–1120.
- Bouveresse, J. (1995). *Wittgenstein reads Freud: the Myth of the Unconscious*. New Jersey. Princeton University Press
- Bozo, Ö., Tunca, A., and Şimşek, Y. (2009). The Effect of Death Anxiety and Age on Health-Promoting Behaviors: A Terror-Management Theory Perspective. *The Journal of Psychology*, 143(4): 377–389.
- Brace, N., Kemp, R., and Snelgar, R. (2000). *SPSS for Psychologist. A Guide to Data Analysis using SPSS for Windows*. (Version 8, 9 and 10). London. Lawrence Erlbaum Association.
- Braisby, N., and Gellatly, A. (2005). *Cognitive Psychology*. New York. Oxford University.
- Breuer, J., and Freud, S. (1937). *Studies in Hysteria*. Boston. Nervous and Mental Disease. Beacon press.
- Brown, R.J., and Oakley, D.A. (1998). Hypnotic Susceptibility and Holistic-Emotional Styles of Thinking. *Contemporary Hypnosis*, 15(2):76–83
- Burger, J.M. (2008). *Personality*. (7<sup>th</sup> ed.) USA. Thomson Wadsworth.
- Burns, L.B., and D’Zurilla, T.J. (1999). Individual Differences in Perceived Information- Processing Styles in Stress and Coping Situations: Development and Validation of the Perceived Modes of Processing Inventory. *Cognitive Therapy and Research*, 23 (4): 345-371.
- Buss, D.M. (1997). Human Social Motivation in Evolutionary Perspective: Grounding Terror Management Theory. *Psychological Inquiry*, 8(1): 22-26.
- Byrne, B.M. (2010). *Structural Equation Modelling with AMOS: Basic Concepts, Applications and Programming*. (2<sup>nd</sup> ed.). New York. Taylor & Francis Groups.
- Carr, A. (2002). Managing in a Psychoanalytically informed Manner. *Journal of Managerial Psychology*, 17(5): 343-347.

- Cassino, D., Taber, C. S., and Lodge, M. (2007). Information Processing and Public Opinion. *Politische Vierteljahresschrift*, 48. Jg. Heft 2, S. 205–220.
- Cattell, R.B. (1966). The Scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245-276.
- Cattell, R.B., and Vogelmann, S. (1977). A comprehensive trial of the scree and KG criteria for determining the number of factors. *Multivariate Behavioral Research*, 12:289-325.
- Ceyhan, E., and Namlu, A.G. (2000). Computer anxiety scale (CAS): Validity and reliability study. *Journal of Anadolu University Education Faculty*, 10 (2):77-93.
- Chandler, P. (2004). The crucial role of cognitive processes in the design of dynamic visualizations. *Learning and Instruction*, 14:353–357. Elsevier Ltd.
- Chartrand, T.L., and Bargh, J.A. (1996). Automatic Activation of Impression Formation and Memorization Goals: Nonconscious Goal Priming Reproduces Effects of Explicit Task Instructions. *Journal of Personality and Social Psychology*, 71(3): 464-478.
- Chen, M., and Bargh, J.A. (1997). Nonconscious Behavioral Confirmation Processes: The Self-Fulfilling Consequences of Automatic Stereotype Activation. *Journal of Experimental Social Psychology*, 33: 541–560.
- Churchland, P.M. (1995). *The Engine of Reason, the Seat of the Soul: A Philosophical Journey into the Brain*, ISBN 0-262-03224-4, MIT Press, Cambridge, MA.
- Clark, J. M., and Paivio, A. (1991). Dual coding theory and education. *Educational Psychology Review*, 71: 64-73.
- Clark, A. J. (1991). The Identification and Modification of Defense Mechanisms in Counseling. *Journal of Counseling & Development*, 69.
- Cleeremans, A., Destrebecqz, A., and Boyer, M. (1998). Implicit learning: news from the front. *Trends in Cognitive Sciences*, 2(10).
- Cohen, R. J., and Swerdlik, M.E. (2010). *Psychological Testing and Assessment. An Introduction to Tests & Measurement*. (7<sup>th</sup> ed.) Singapore. McGraw-Hill.
- Cohen, S.K.D. (2007). *Handbook of Cultural Psychology*. New York. U.S.A. Guilford.
- Comer, R.J. (2008) *Abnormal Psychology* (7<sup>th</sup> ed). New York. Worth Publishers
- Comrey, A.L., and Lee, H.B. (1992). *A First Course in Factor Analysis*. (2<sup>nd</sup> ed.), New Jersey: Lawrence Erlbaum Associates, Publishers, Hillsdale.

- Connell, W.F., Andersen, W. E., Campbell, W.J., Debus, R.L., Howie, G., Maclaine, A.G., Miller, T.W.G., Neale, M.D., Spearritt, D., Verco, D.J.A., and Wylie, J.F. (1972). *The Foundation of Education* (2<sup>nd</sup> ed.). Sydney. Ian Novak.
- Conway, J.M., and Huffcutt, A.I. (2003). A review and evaluation of Exploratory Factor analysis Practice in organizational research. *Organizational Research Methods*, 6(2):147-168. Sage Publication.
- Costello, A.B., and Osborne, J.W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment Research & Evaluation*, 10(7).
- Cox, C.R., Arndt, J., Pyszczynski, T., Greenberg, J., Abdollahi, A., and Solomon, S. (2008). Terror Management and Adults' Attachment to Their Parents: The Safe Haven Remains. *Journal of Personality and Social Psychology*, 94(4): 696–717.
- Creswell, J.W. (2008). *Educational Research: Planning, Conducting, And Evaluating Quantitative And Quantitative Research*. (3<sup>rd</sup> ed). New Jersey. Pearson Education.
- Creswell, J.W., and Plano Clark, V.L. (2007). *Designing And Conducting Mixed Methods Research*. Thousand Oaks, CA: Sage
- Crook, J. (1980). *The Evaluation of Human Conscious*. UK. Oxford University.
- Çubukcu, Z. (2006). Critical Thinking Dispositions of the Turkish Teacher Candidates. *The Turkish Online Journal of Educational Technology*, 5 (4).
- Cudeck, R., and O'Dell, L.L. (1994). Applications of standard error estimates in unrestricted factor analysis: Significance tests for factor loadings and correlations. *Psychological Bulletin*, 115: 475-487.
- Curran, P.J., West, S.G., and Finch, J.F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, 1: 16-29.
- Curriculum Development Center (1989). *Integrated curriculum for secondary schools*. Kuala Lumpur, Malaysia: Minister of Education. (pp. 1.2.6.27)
- Damasio, A.R. (1994). *Descartes' Error: Emotion, Reason and the Human Brain*. Newyork: G.P. Putnam's Sons.
- Dean, C.L. (2005). *The Tragic Human and Desire in "The Ethics of Psychoanalysis" Seminar VII of Lacan*. Gamahucher Press, West Geelong, Victoria, Australia.

- Debiec, J., and LeDoux, J.L. (2004). Fear and Brain. *Social Research*, 71 (4): 807  
ProQuest Science Journals.
- DeBono, E. (1983). The direct teaching of thinking as a skill. *Phi Delta Kappan*, 64:  
703-708.
- Dennett, D.C. (1991). *Consciousness Explained*. London. The Penguin Press.
- Dijksterhuis, A. (2004a). Think Different: The Merits of Unconscious Thought in  
Preference development and Decision Making. *Journal of Personality and  
Social Psychology*, 87(5): 586–598.
- Dijksterhuis, A., and Olden, Z.V. (2006). On the benefits of thinking unconsciously:  
Unconscious thought can increase post-choice satisfaction. *Journal of  
Experimental Social Psychology*, 42: 627–631
- Dijksterhuis, A. (2004b). I Like Myself but I Don't Know Why: Enhancing Implicit  
Self-Esteem by Subliminal Evaluative Conditioning. *Journal of Personality  
and Social Psychology*, 86(2):345–355.
- Dijksterhuis, A., and Nordgren L.F. (2006). A Theory of Unconscious Thought.  
*Perspectives on Psychological Science*, 1(2).
- Dijksterhuis, A., and Smith P. K. (2002). Affective Habituation: Subliminal  
Exposure to Extreme Stimuli Decreases Their Extremity. *Emotion*, 2(3): 203–  
214.
- Dijksterhuis, A., and Smith, P.K. (2005). What Do We Do Unconsciously? And  
How? *Journal of Consumer Psychology*, 15(3): 225–229. Lawrence Erlbaum  
Associates.
- Dijksterhuis, A., and Teun, M. (2006). Where creativity resides: The generative  
power of unconscious thought. *Consciousness and Cognition*, 15: 135–  
146. from [www.elsevier.com/locate/concog](http://www.elsevier.com/locate/concog).
- Dijksterhuis, A., Maarten, W., Bos, L.F., Nordgren, R.B., and Baaren, V. (2006). On  
Making the Right Choice: The Deliberation-Without-Attention Effect.  
*Science*, 311: 1005.
- Dijksterhuis, A., Smith, P.K., Rick, B., Baaren, V., and Wigboldus, D.H.J. (2005)  
The Unconscious Consumer: Effects of Environment on Consumer Behavior.  
*Journal of Consumer Psychology*, 15(3):193–202.
- Dollard, J., and Miller. (1980). *Personality and Psychotherapy: An Analysis In Terms  
of Learning and Culture*. (Standard edition) New York: McGraw-Hill.
- Dulany, D. E. (2001). Inattentional Awareness. *PSYCHE*, 7(05).



- Duralı, Ş.T. (2000). Çağdaş Küresel Medeniyet : Anlamı-Gelişimi-Konumu. Çağdaş Küreselleştirilen İngiliz-Yahudi Medeniyeti. (1<sup>st</sup> ed). Istanbul. Turkey. Dergah Yayınları. (*Contemporaneous global civilization: Meaning-Development-Position of it. Globalized Anglo-Judaic Civilization*).
- Duralı, Ş.T. (2006). Felsefe-Bilim Nedir? (1<sup>st</sup> ed). Istanbul. Turkey. Dergah Yayınları. (*What is Philosophy-Science?*).
- Educational Planning and Research Division (1994). Education in Malaysia. Kuala Lumpur, Malaysia: Ministry of Education. p. vii.
- Edwards, D., and Jacobs, M. (2003). *Conscious and Unconscious*. UK. Open University.
- Eggen, P.D., and Kauchak, D.P. (1988). *Strategies for Teachers: Teaching Content and Thinking Skills*. U.S.A. Prentice Hall. A division of Simon & Schuster.
- Epstein, S. (1998). Cognitive-experiential self-theory. In Barone, D.F, Hersen, M., and Hasselt, V.B.V. (Eds.), *Advanced personality* (pp. 211-238). New York: Plenum.
- Epstein, S. (2003). Cognitive-experiential self-theory of personality. In Millon, T., and Lerner, M.J. (Eds), *Comprehensive Handbook of Psychology: Personality and Social Psychology*, 5. (pp. 159-184). Hoboken, NJ: Wiley & Sons.
- Erdelyi, M.H. (2006). The unified theory of repression. *Behavioral and Brain Sciences*, 29: 499–551. U.S.A, Cambridge University press.
- Erikson, E.H. (1950). *Childhood and Society*. New York, Norton.
- Erikson, E.H. (1968). *Identity: Youth and Crisis*. New York, Norton.
- Ertepinar, H. (1995). The Relationship between Formal Reasoning Ability, Computer Assisted Instruction, And Chemistry Achievement. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* 11: 21-24.
- Erwin, E. (1996). *A Final Accounting: Philosophical and Empirical Issues in Freudian Psychology*. London, England. MIT Press
- Evans, D. (2006). *An Introductory Dictionary of Lacanian Psychoanalysis*. New York, USA. Routledge. Taylor & Francis e-Library.
- Fabrigar, L.R., Wegener, D.T., MacCallum, R.C., and Strahan, E.J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4: 272-299.

- Fazio, R. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. *Advances in Experimental Social Psychology*, 23: 75-109.
- Field, A. (2002). *Discovering Statistics Using SPSS* (1<sup>st</sup> ed.). UK: London. Sage Publications.
- Field, A. (2009). *Discovering Statistics using SPSS* (3<sup>rd</sup> ed.) UK. London. Sage Publication.
- Field, A. (2005). *Discovering statistics using SPSS*. (2<sup>th</sup> ed.). UK. London. Sage publication.
- Figler, R., and Hanlon, S. (2008). Management Development and the Unconscious from an Analytical Psychology Framework. *Journal of Management Development*, 27(6): 613-630. Emerald Group.
- Fordham, M. (1945). The development and status of Jung's Researches. *British Journal of Medical Psychology*, 20(3). In Hobdell, R. (2005). *Freud, Jung, Klein-the fenceless field: Essays on psychoanalysis and analytical psychology*, (pp. 68-87). USA. Taylor & Francis e-Library.
- Fordham, M. (1980). The emergence of child analysis. *Journal of Analytical Psychology*, 25(4). In Hobdell, R. (2005). *Freud, Jung, Klein-the fenceless field: Essays on psychoanalysis and analytical psychology*, (pp.121-130). USA. Taylor & Francis e-Library.
- Fordham, M. (1981). Neumann and childhood. *Journal of Analytical Psychology*, 26(2). In Hobdell, R. (2005). *Freud, Jung, Klein-the fenceless field: Essays on psychoanalysis and analytical psychology*, (pp. 132-149). USA. Taylor & Francis e-Library.
- Freud, S. (1900). The Interpretation of Dream. In Strachey, J. (Ed.), (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud, (1893-1940)*:London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1905a). Fragments of an analysis of a case of hysteria. In Strachey, J. (Ed.) (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud*. London, The Hogarth Press and the Institute of Psycho-analysis.

- Freud, S. (1905b). Three Essays on the Theory of Sexuality. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, (1893-1940): London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1907). Obsessive Actions and Religious Practices. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (1893-1940): London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1908). 'Civilized' Sexual Morality and Modern Nervous Illness. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (1893-1940): London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1911). *The Interpretation of Dreams*. (3<sup>rd</sup> ed.)Vienna, Austria. Dr Brill.
- Freud, S. (1915a). Instincts and Their Vicissitudes. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (1893-1940): London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1915b). The Unconscious. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (1893-1940): London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1915c). Repression. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (1893-1940): London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1919). Totem and Taboo: Resemblances between the psychic lives of savages and neurotics. Translated by Brill. New York, Moffat and Yard Company.
- Freud, S. (1920a). Beyond The Pleasure Principle. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (1893-1940):London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1920b). *Dream Psychology: Psychoanalysis for Beginners*. New York, U.S.A. James A. McCANN.
- Freud, S. (1921). *Group Psychology and the Analysis of the Ego*. New York. W.W. Norton & Company.

- Freud, S. (1933). New Introductory Lectures on Psycho-Analysis and Other Works. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud (1893-1940)*: London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1939). *Moses and Monotheism*. Great Britanian. Hogarth press and Institute of Psycho-Analysis.
- Freud, S. (1940). An outline of Psycho-Analysis. In Strachey, J. (Ed.). (1964). *The Standard Edition of the Complete Psychological Works of Sigmund Freud (1893-1940)*: London, The Hogarth Press and the Institute of Psycho-analysis.
- Freud, S. (1949). The Theory of Instinct and Mental Qualities. In Thompson, C., Mazer, M., and Witenberg, E. (Eds.). (1955). *An outline of Psychoanalysis*. (Revised edition). New York. Random House.
- Garcia, T., and Pintrich, P.R. (1994). Regulating motivation and cognition in the classroom: The role of self-schemas and self-regulatory strategies. In Schunck, D.H., & Zimmerman, B.J. (Eds.), *Self-Regulation of Learning and Performance: Issues and Educational Applications*. Hillsdale, NJ: Erlbaum.
- Garcia, T. (1995). The role of motivational strategies in self-regulated learning. In Pintrich, P.R. (Ed.), *New Directions for College Teaching and Learning: Self-Regulated Learning in the College Classroom* (pp. 29-42). San Francisco. Jossey-Bass.
- Ghazzali, Imam. (1993). *Revival of religious learnings ihya-ulum -id- din*. (1<sup>st</sup> ed.) Vol. III. Translated by Fazl-ul Karim. Karachi- Pakistan. Daril Ishaat Urdu Bazar.
- Gilhooley, D. (2008). Psychoanalysis and the “Cognitive Unconscious”: Implications for Clinical Technique. *Modern Psychoanalysis*, 33(1): 91-119.
- Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, 8(4), 597-607.
- Goldenberg, J.L, Pyszczynski, T., Greenberg, J., Solomon, S., Muck, B., and Cornwell, R. (2001). I Am Not an Animal: Mortality Saliency, Disgust, and the Denial of Human Creatureliness. *Journal of Experimental Psychology: General*, 130(3), 427-435

- Goldenberg, J.L., Pyszczynski, T., Greenberg, J., and Solomon, S. (2000). Fleeing the body: A terror management perspective on the problem of human corporeality. *Personality and Social Psychology Review*, 4 (3), 200–218
- Goodrum, D. (1979). Creative and Logical Thinking in Adolescents. *Research in Science Education*, 9: 177-182.
- Gould, S.J. (1981). *The mismeasure of man*. New York: Norton.
- Gravetter, F.G., and Wallnau, L.B. (2004). *Statistics for the Behavioral Sciences* (6<sup>th</sup> ed.). USA. Thomson Learning, Inc.
- Gray, E., Pinto, M., Pitta, D., and Tall, D. (1999). Knowledge Construction and Diverging Thinking in Elementary and Advanced Mathematics. *Educational Studies in Mathematics* 38: 111–133. Netherlands. Kluwer Academic.
- Greenberg, J., Arndt, J., Schimel, J., Pyszczynski, T., and Solomon, S. (2001). Clarifying the Function of Mortality Salience-Induced Worldview Defense: Renewed Suppression or Reduced Accessibility of Death-Related Thoughts? *Journal of Experimental Social Psychology*, 37, 70–76
- Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., and Lyon, D. (1990). Evidence for Terror Management Theory II: The Effects of Mortality Salience on Reactions to Those Who Threaten or Bolster the Cultural Worldview. *Journal of Personality and Social Psychology*, 58 (2), 308-318.
- Greenberg, J., Pyszczynski, T., Solomon, S., Simon, L., and Breus, M. (1994). Role of consciousness and accessibility of death-related thoughts in mortality salience effects. *Journal of Personality and Social Psychology*, 67, 627-637.
- Greenwald, A.G., and Banaji, M.R. (1995). Implicit social cognition Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102: 4-27.
- Grosz, E. (1995). *Jacques Lacan: A feminist introduction*. London: Routledge.
- Haidt, J. and Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus*, 133: 55-66.
- Haidt, J. (2008). Morality. *Perspectives on Psychological Science*, 3: 65-72.
- Haig, B.D. (2005). Exploratory factor analysis, theory generation, and scientific method. *Multivariate Behavioral Research*, 40: 303–329.
- Hakstian, A.R., Rogers, W.T., and Cattell, R.B. (1982). The behavior of number-of-factors rules with simulated data. *Multivariate Behavioral Research*, 17, 193-219.

- Hall, C.S., and Lindzey, G. (1978). *Theories of Personality*. (3<sup>rd</sup> ed.) USA. John&Sons.
- Hall, G.E., Quinn L.F., and Golnick D.M. (2008). *The joy of Teaching: making a difference in student learning*. USA. Pearson Education/ Allyn and Bacon.
- Hamilton, I.S. (2007). *Dictionary of Psychological Testing, Assessment and Treatment*. (2<sup>nd</sup> ed.). London. UK. Jessica Kingsley.
- Harrington, D. (2009). Confirmatory Factor Analysis. In Tripodi, T. (Ed.). *Pocket Guides To Social Work Research Methods*. UK. Oxford University.
- Hasher, L., and Zacks, R.T. (1984). Automatic Processing of Fundamental Information: The Case of Frequency of Occurrence. *American Psychologist*, 39(12): 1372-1388. American Psychologist
- Haydn, H. (Ed). (1951). Sigmund Freud: His Exploration of The Mind of Man. New York. Charles Scribner's Sons.
- Hills, M. (1977). A review of "An introduction to multivariate techniques for social and behavioral sciences." *Applied Statistics*, 26: 339-340.
- Hinton, P. C., Brownlow, C., McMurray, I., and Cozens, B. (2004). *SPSS explained*. Canada. Routledge Inc.
- Ho, R. (2006). *Handbook of Univariate and Multivariate Data Analysis and Interpretation with SPSS*. USA. Chapman & Hall/CRC.Taylor & Francis Group.
- Hoare, C. (2006). *Handbook of Adult Development and Learning*. New York Oxford University Press.
- Hobdell, R. (2005). Freud, Jung, Klein-the fenceless field: Essays on psychoanalysis and analytical psychology. USA. Taylor & Francis e-Library, 2005.
- Hogan, R., Johnson, J., and Briggs, S. (Ed). (1997). *Handbook of personality psychology*. London. Academic press.
- Holmes, D.S. (1990). The evidence for repression: an examination of sixty years of research .In Singer, J.L. (Ed). *Repression and dissociation: implication for personality theory, psychopathology, and health*. Series II, (pp 85-103) .U.S.A. The University of Chicago.
- Holyoak, K.J., and Morrison, R.G. (Ed). (2005). *The Cambridge Handbook of Thinking and Reasoning*. Cambridge. Cambridge University.

- Horowitz, M.J. (1988). *Introduction to Psychodynamics A New Synthesis*. Great Britain. Routledge, from <http://psyche.cs.monash.edu.au/v7/psyche-7-05-dulany.html>
- Hu, L., Bentler, P. M., and Kano, Y. (1992). Can test statistics in covariance structure analysis be trusted? *Psychological Bulletin*, 112: 351-362.
- Ivankova, N.V., Creswell, J.W., and Stick, S.L. (2006). Using mixed methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3-20.
- Jack, A.I., and Shallice, T. (2001) Introspective Physicalism as an Approach to the Science of Consciousness. *Cognition*, 79(1-2):161-196.
- Jacoby, L.L., and Witherspoon, D. (1982). Remembering without awareness. *Canadian Journal of Psychology*, 36: 300-324.
- Jacoby, L.L., Lindsay, D.S., and Toth, J.P. (1992). Unconscious influences revealed: Attention, awareness, and control. *American Psychologist*, 47: 802-809.
- James, W. (1890/1980). *Principles of Psychology*. Cambridge, Ma.: Harvard University.
- Jeff, S., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., Waxmonsky, J., and Arndt, J. (1999). Stereotypes and Terror Management: Evidence That Mortality Salience Enhances Stereotypic Thinking and Preferences. *Journal of Personality and Social Psychology*, 77(5): 905-926.
- Jenson, E. (1998). *Teaching with the Brain in Mind*. Association for Supervision and Curriculum Development. Alexandria, Virginia. USA.
- Jervis, G. (2007). The Unconscious. In Marraffa, M., Caro, M. D and Ferretti, F. (Eds.). Review, Levy, N., Ph.D. *Cartographies of the Mind, Philosophy and Psychology in Intersection*, 11(22): 147-158. Springer.
- Jordaan, A., and Jordaan, D. (2005). A logical and structural thinking development tool (LST) to enhance fundamental problem-solving skills of learners of information technology. *The Journal for Transdisciplinary Research in Southern Africa*, 1(1): 59-76.
- Jung, C.G. (1949). *Psychology of The Unconscious: A study of the transformations and symbolisms of the libido, and a contribution to the history of the evolution of thought*. New York. Dodd, Mead And Company.
- Kaiser, H.F. (1974). An index of factorial simplicity. *Psychometrika*, 39: 31-36.

- Karasar, N. (1995). *Bilimsel Araştırma Yöntemi: Kavramlar, İlkeler ve Teknikler*. Ankara: 3A Araştırma Eğitim Danışmanlık Ltd. Şti.
- Kihlstrom, J. F. (2008). The psychological unconscious. In John, O.P., Robins, R, and Pervin, L. (Eds.), *Handbook of Personality: Theory and Research*, (3<sup>rd</sup> ed) (pp. 583-602). New York: Guilford.
- Kihlstrom, J.F. (1996). *Perception without awareness of what is perceived, learning without awareness of what is learned*. From <http://socrates.berkeley.edu/~kihlstrm/Velmans96.htm>
- Kihlstrom, J.F. (2006). *The automaticity juggernaut*. <http://socrates.berkeley.edu/~kihlstrm/Juggernaut.htm>
- Kihlstrom, J.F. (2007a). What Revisions are Necessary in Scientific Models of Unconscious Mental Activity. *The Vienna Conference on Consciousness 2007*, organized by the Faculty of Life Sciences at the University of Vienna, October 5. Austria, Vienna
- Kihlstrom, J.F. (2007b). Revising Scientific Models of Unconscious Mental Activity. from <http://socrates.berkeley.edu/~kihlstrm>
- Kihlstrom, J.F. (1987). The cognitive unconscious. *Science*, 237: 1445-1452.
- Kihlstrom, J.F., Barnhardt, T.M., and Tataryn, D.J. (1992). The Psychological Unconscious: Found, Lost, and Regained. *American Psychologist*, 47 (6):788-791.
- Kim, J. O., and Mueller, C. W. (1978). *Factor analysis: Statistical methods and practical issues*. Beverly Hills, CA: Sage.
- Kirkley, K. (2003). Principles for Teaching Problem Solving. *Technical Paper*, 4. Plato Learning.
- Kline, P.(1994). *An Easy Guide to Factor Analysis*. London. Routledge.
- Koole, S.L., Dijksterhuis, A., and Knippenberg, A.V. (2001). What's in a Name: Implicit Self-Esteem and the Automatic Self. *Journal of Personality and Social Psychology*, 80(4): 669-685, American Psychological Association.
- Kosnin, A.M. (2007). Self-Regulated Learning and Academic Achievement in Malaysian Undergraduates. *International Education Journal*, 8(1), 221-228.
- Krejcie, R.V and Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement* 30,609.
- Lacan, J. (1977). *Ecrits. A selection*. London: Tavistock.



- Landau, M.L., Solomon, S., Pyszczynski, T. and Greenberg, J. (2007). On the Compatibility of Terror Management Theory and Perspectives on Human Evolution. *Evolutionary Psychology*, 5(3): 476-519.
- Landau, S., and Everitt, B. S. (2004). *A Handbook of Statistical Analysis using SPSS*. London. Chapman & Hall/CRC Press Company.
- Larsen, R. J., and Buss, D.M. (2008). *Personality Psychology: Domain of Knowledge about Human Nature*. (3<sup>rd</sup> ed). U.S.A. McGraw-Hill.
- Lear, J. (2005). *Freud*, U.S.A. Taylor & Francis Group.
- Leary, M.R., and Baumeister, R.F. (2000). The Nature and Function of Self-Esteem: Sociometer Theory. In Zanna, M.P (Ed), (2000). *Advances In Experimental Social Psychology*, 32, 1-63.
- Leary, M.L. and Schreindorfer, L.S. (1997). Unresolved Issues with Terror Management Theory. *Psychological Inquiry*, 8(1): 26.
- LeDoux, J. E. (2000). Emotion Circuits in the Brain. *Annu. Rev. Neurosci*, 23, 155–184. Annual Reviews.
- LeDoux, J.E., and Muller, J. (1997). *Phil.Trans. R. Soc. Lond*, 352, 1719-1726. Great Britain. Royal Society.
- LeDoux, J.E. (1997). Emotion Memory and the Brain. *Scientific American*. Reprinted from the June, issue 1994:68-75.
- LeDoux, J.E. (2009). Manipulating memory. *The Scientist*, 23 (3): 41 ProQuest Science.
- Levy, D. (2003). How to Psychoanalyze a Robot: Unconscious Cognition and the Evolution of Intentionality. *Minds and Machines*, 13: 203-212.
- Lewicki, P. (1985). Nonconscious biasing effects of single instances on subsequent judgments. *Journal of Personality and Social Psychology*, 48: 563-574.
- Lewicki, P., Czyzewska, M., and Hoffman, H. (1987). Unconscious Acquisition of Complex Procedural Knowledge, Learning, Memory, and Cognition. *Journal of Experimental Psychology*, 13(4): 523-530.
- Lewicki, P., Hill, T., and Czyzewska, M. (1992). Nonconscious acquisition of information. *American Psychologist*, 47, 796-801.
- Libet, B. (1999). Do We Have Free Will? *Journal of Consciousness Studies*, 6 (8-9): 47–57.

- Libet, B., Gleason, C.A., Wright, E.W., and Pearl, D.K. (1983), Time of conscious intention to act in relation to onset of cerebral activity (readiness potential). *The unconscious initiation of a freely voluntary act. Brain*, 106 (3): 623-642.
- Libet, B., Pearl, D.K., Morledge, D.E., Gleason, C.A., HosoBuchi, Y., and Barbaro, N. M. (1991). Control of the transition from sensory detection to sensory awareness in man by the duration of a thalamic stimulus. The cerebral 'time-on' factor. *Brain*, 114(4): 1731-1757.
- Loftus, E.F., and Klinger, M.R. (1992). Is the Unconscious Smart or Dumb? *American Psychologist*, 47(6): 761-765.
- Lovrek, R.J., Howlett ., and Jain, L.C. (Eds.) .(2008). *KES* , Part III, LNAI 5179, pp. 580–587.
- Luc, Stevens., Werkhoven W.V., Stokking, K., Castelijns, J., and Jager, A. (2001) Interactive Instruction to Prevent Attention Problems in Class. Netherlands. *Learning Environments Research*. 3, 265–286. Kluwer Academic.
- MacCallum, R.C., Widaman, K.F., Zhang, S., and Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4: 84-89.
- Makari, G. (2008). *Revolution in Mind: The Creation of Psychoanalysis*. USA, New York. HarperCollins Inc.
- Manson, M. (2005). Consciousness-Dependence, And the Conscious/Unconscious Contrast. *Philosophical Studies*, 126:115–129.
- Marland, P.W., and Edwards, J. (1986). Students' in-class thinking. *Instructional Science*, 15:75-88. Netherlands. Martinus Nijhoff Publishers, Dordrecht.
- Massaro, D.W. (1995). It is prime time-Implicit Memory: New Directions in Cognition, Development, and Neuropsychology. *The American Journal of Psychology*, 108 (2): 275
- Mathews, A., and Mackintosh, B. (1998). A Cognitive Model of Selective Processing in Anxiety . *Cognitive Therapy and Research*, 22(6): 539-560
- McArdle, J.J. (1990). Principles versus principals of structural factor analyses. *Multivariate Behavioral Research*, 25: 81-87.
- Meissner, W.W. (2008). Mind-brain and consciousness in psychoanalysis. *Bulletin of the Menninger Clinic*, 72(4): 283-312.
- Merikle, P.M., and Daneman, M. (1998). Psychological Investigations of Unconscious Perception. *Journal of Consciousness Studies*, 5(1): 5-18.

- Mijolla, A. D. (Ed). (2005). *International Dictionary of Psychoanalysis*. (Vol., I, II, III). New York, U.S.A. Thomson Gale.
- Miller, G.A. (1955). The Magical Number Seven, Plus or Minus Two Some Limits on Our Capacity for Processing Information. *Psychological Review*, 101(2): 343-352.
- Miller, J.A. (1992). The Ethics Of Psychoanalysis, 1959-1960. The Seminar of Jacques Lacan. Book VII. UK. Routledge.
- Moore, K.D. (2005). *Instructional Strategies: from theory to practice*. U.S.A. Sage.
- Moors, A., and DeHouwer, J. (2006). Automaticity: A Theoretical and Conceptual Analysis. *Psychological Bulletin*, 132(2): 297-326.
- Moseley, D., Baumfield, V., Elliott, J., Gregson, M., Higgins, S., Miller, J., and Newton, D. (2005). *Frameworks for Thinking: A Handbook for Teaching and Learning*. (1<sup>st</sup> ed.). New York, U.S.A. Cambridge University Press.
- Nagappan, R. (2001). The Teaching of Higher-Order Thinking Skills in Malaysia. *Journal of Southeast Asian Education*, 2(1).
- Neuman, Y., and Nave, O. (2009). Why the brain needs language in order to be self-conscious. *New Ideas in Psychology*, 28:37-48.
- Newell, A., and Simon, H.A. (1959). *The stimulation of human thought*. *Mathematic Division*: RAND Corporation. P-1732 .California.
- Newitt, C.S. (2009). *An Intuitive Turn: Understanding The Roles Of Intuitive And Rational Processes In Moral Decision-Making*. PhD. Thesis. The University Of British Columbia (Vancouver). Canada. Christopher Scott Newitt.
- Niaz, M., and Robinson, W.R. (1993). Teaching Algorithmic Problem Solving or Conceptual Understanding: Role of Developmental Level, Mental Capacity, and Cognitive Style. *Journal of Science Education and Technology*, 2(2).
- Nigoff, A. (2008). *Social Information Processing and Aggression in Understanding School Violence: An Application of Crick and Dodge's Model*. In Miller. T.W. (ed.), *School Violence and Primary Prevention*. pg 79-93. New York. Springer.
- Nisbett, R., and Wilson, T. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84: 231-259.
- Noronha, C. (1999). Confirmation of a four-variable quality management model. *Managerial Auditing Journal*. 14(1/2), 12-19. MCB University Press.
- Norusis, M.J. (2005). *SPSS 13.0 Statistical Procedures Companion*. Chicago: SPSS.

- Nuttin, M.J.Jr. (1985). Narcissism beyond Gestalt and Awareness: The name letter effect. *European Journal of Social Psychology*, 15: 353-261.
- Öhman, A., and Soares, J.J.F. (1994). "Unconscious Anxiety": Phobic Responses to Masked Stimuli. *Journal of Abnormal Psychology*, 103(2): 231-240. American Psychological Association.
- Overall, J. E. (1964). Note on the scientific status of factors. *Psychological Bulletin*, 61: 270-276.
- Pallant, J. (2007). *Survival Manual: A step by step Guide to Data Analysis using SPSS for windows third edition*. USA. New York. Open University Press.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3<sup>rd</sup> ed.). Thousand Oaks, CA: Sage
- Paul, A., Klaczynski, J.M., Fauth., and Swanger, A. (1998). Adolescent Identity: Rational vs. Experiential Processing, Formal Operations, and Critical Thinking Beliefs. *Journal of Youth and Adolescence*, 27(2).
- Pavio, A., (1991). Dual -coding theory: retrospect and current status. *Canadian Journals of Psychology*, 45: 255-287.
- Peirce, C.S. (1992). *Reasoning and the logic of things*. In: Ketner, K.L., Putnam, H. (Eds.), Cambridge. Harvard University Press.
- Piaget, J. (1964). Development And Learning. *Journal of Research in Science Teaching*. 26(3), 221-235.
- Pintrich, P.R., & DeGroot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82(1), 33-40.
- Pintrich, P.R. (1995). Understanding Self-Regulated Learning. In Pintrich, P. (Ed.), *Understanding Self-Regulated Learning*. San Francisco, CA. Jossey-Bass.
- Pyszczynski, T., and Goldenberg, J.L. (1999). Self-Awareness, Future-Orientation, and Human Social Motivation. *Psychological Inquiry*, 10(3), 232-235.
- Pyszczynski, T., and Greenberg, J. (1992). Putting Cognitive Constructs in Their Place: Is Depression Really Just a Matter of Interpretation? *Psychological Inquiry*, 3(3): 255-258.
- Pyszczynski, T., Greenberg, J., and Solomon, S. (1997). Why Do We Need What We Need? A Terror Management Perspective on the Roots of Human Social Motivation. *Psychological Inquiry*, 8(1), 1-20.

- Pyszczynski, T., Greenberg, J. and Solomon, S. (2000a). Proximal and Distal Defense: A New Perspective on Unconscious Motivation. *Current Direction in Psychological Science*, 9(5): 156-160.
- Pyszczynski, T., Greenberg, T. and Solomon, S. (2000b). Toward a Dialectical Analysis of Growth and Defensive Motives. *Psychological Inquiry*, 11(4): 301-305.
- Pyszczynski, T., Greenberg, J., and Solomon, S. (1999). A dual process model of defense against conscious and unconscious death related thoughts: An extension of terror management theory. *Psychological Review*, 106(4), 835–845.
- Reber, A.S. (1989). Implicit learning and tacit knowledge. *Journal of Experimental Psychology: General*, 118(3): 219–235.
- Reber, A.S. (1992). An evolutionary context for the cognitive unconscious. *Philosophical Psychology*, 5: 33–51.
- Robert, A. (1973). Schema Theory: An Information Processing Model of Perception and Cognition. *The American Political Science Review*, 67(4): 1248-1266.
- Robertson, D.L. (1999). Unconscious Displacements in College Teacher and Student Relationships: Conceptualizing, Identifying, and Managing Transference. *Innovative Higher Education*, 23(3). Spring.
- Roeckelein, J.E. (2006). Elsevier's Dictionary of Psychological Theories. USA. New York. Fountain Hills.
- Rogan, M.T., and LeDoux, J.E. (1996). Emotion: Systems, Cells, Review Synaptic Plasticity. *Cell*, 85, 469–475. Cell Press.
- Rolls, E.T. (2006). Brain mechanisms of emotion and decision-making. *International Congress Series*, 1291, 3–13. Elsevier B.V.
- Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., and Lyon, D. (1989). Evidence for terror management theory: I. The effects of mortality salience on reactions to. *Journal of Personality and Social Psychology*, 57(4), 681–90.
- Routledge, C., Arndt, J., and Goldenberg, J.L. (2004). A time to tan: Proximal and distal effects of mortality salience on sun exposure intentions. *Personality and Social Psychology Bulletin*, 30, 1347-1358.
- Rudolph, S., Dau, F., and Kuznetsov, S.O. (Eds.). (2009). *ICCS*, LNAI 5662:66–85.
- Sa, W.C., West, R.F., and Stanovich, K.E. (1999). The Domain Specificity and Generality of Belief Bias: Searching for a Generalizable Critical Thinking Skill. *Journal of Educational Psychology*, 91(3):497-510.

- Sadler, S. E. and Richard, R.R. (1999). Cognitive style and instructional preferences. *Instructional Science*, 27: 355-371. Netherlands. Kluwer Academic.
- Salas-Auvert, J.A., and Felgoise, S.H. (2003). The Rational-Experiential Information Processing System Model: It's Implication for Cognitive Therapy. *International Journal of Clinical and Health Psychology*, 3(1):123-140.
- Salkind, N.J. (Ed). (2008). *Encyclopedia of educational psychology*. Vol. 1 & 2. USA. SAGE Publications.
- Sari, E., (2008). The Relations between Decision Making in Social Relationship and Decision Making Styles. *World Applied Sciences Journal*, 3 (3): 369-381.
- Schacter, D.L. (1992). Understanding implicit memory: A cognitive neuroscience approach. *American Psychologist*, 47: 559-569.
- Schimmel, J., Wohl, M.J.A. and Williams, T. (2006). Terror Management and Trait Empathy: Evidence that Mortality Salience Promotes Reactions of Forgiveness among People with High (vs. low) Trait Empathy *Motiv Emot.* 30, 217–227.
- Schunk, D.H., and Zimmerman, B.J. (2003). Self-Regulation and Learning. In Weiner. I.B. (Ed.chi), and Reynolds, W.M., Miller, G.M. (Vol.7). *Handbook of Psychology: Educational Psychology*. New Jersey. John Wiley & Sons.
- Seger, C. (1994). Implicit learning. *Psychological Bulletin*, 115: 163–196.
- Seong, C.T. (2005). Recent Advances in Cognitive Load Theory Research: Implications for Instructional Designers. *Malaysian Online Journal of Instructional Technology (MOJIT)*, 2 (3):106-117.
- Sharp, D. (1991). *Jung Lexicon: A Primer of Terms & Concepts Studies in Jungian Psychology*; 47. Canada. University of Toronto.
- Siegel, P., and Weinberger, J. (2009). Very brief exposure: The effects of unreportable stimuli on fearful behavior. *Consciousness and Cognition*, 18(4), 939-951
- Sid, K., and Stanislas, D. (2007). Levels of Processing During Non-Conscious Perception: A Critical Review Of Visual Masking. *Philosophical Transactions of the Royal Society*, 362: 857-875.
- Simon, L., Greenberg, J., Harmon-Jones, E., Solomon, S., Pyszczynski, T., Amdt, J., and Abend, T. (1997). Cognitive-experiential self-theory and terror management theory: Evidence that terror management occurs in the experiential system. *Journal of Personality and Social Psychology*, 72, 1132-1146.

- Simpson, D. (2005). *Lacanian Psychoanalytic Theory and the Historical Progression of Discourse: The Shifting of Social and Institutional Identity in Post-World War II America*. Ph.D. Dissertation. Faculty of the Virginia Polytechnic Institute and State University. Harrisonburg, Virginia. U.S.A.
- Sivers, H., Schooler, J., and Freyd, J.J. (2002). Recovered Memories. In Ramachandran V.S. (Ed.) *Encyclopedia of the Human Brain*, (Vol. 4. pp 169-184). U.S.A. Elsevier Science
- Skinner, B.F. (1989). The Origins of Cognitive Thought. *American Psychologist*, 44(1): 13-18.
- Sladek, R.M., Bond, M.J., Huynh, L.T., Chew, D.P.B., and Phillips, P.A. (2008). Thinking styles and doctors' knowledge and behaviours relating to acute coronary syndromes guidelines. *Implementation Science*, 3(23).
- Slavin, R.E. (2009). *Educational Psychology: theory and practice*. (9<sup>th</sup> ed.) U.S.A. Pearson & Merrill.
- Slavin, R.E., (Ed.). (2003). *Educational Psychology: theory and practice*. (7<sup>th</sup> ed) U.S.A, Pearson Education/Allyn and Bacon.
- Smith, G.F. (2003). Beyond Critical Thinking And Decision Making: Teaching Business Students How To Think. *Journal of Management Education*, 27(1):24. ABI/INFORM Global.
- Solomon, S., Greenberg, J., and Pyszczynski, T. (1991). In M.P. Zanna (Ed.). *Advances in experimental social psychology*, ( Vol,24. pp. 93–159) Academic Press.
- Spence, D.P. (2009). Freud's Wartime Unconscious. *Literary Imagination*, 11(2), 154–167. Oxford University Press on behalf of the Association of Literary Scholars and Critics.
- Squire, L.R. (1994). *Declarative and nondeclarative memory: multiple brain system supporting learning and memory*. In: Schacter D.L and Tulvin, E. (Eds) *The memory systems*. MIT Press, Cambridge, MA, pp 203–232
- Stanovich, K.E., and West, R.F. (2007). Natural my-side bias is independent of cognitive ability. *Thinking & Reasoning*, 13(3):225-247. Taylor & Francis Group.
- Statt, D.A. (2003). *The concise dictionary of psychology*. (3rd ed.) USA, New York. Routledge. Taylor & Francis e-Library.
- Sternberg, R.J. (2003). *Cognitive Psychology*. (3<sup>rd</sup> ed.) U.S.A. Thomson & Wadsworth.

- Sullivan, P.A. (1998). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology*, 49, 345.
- Sutherland, K. (2001). Consciousness and Emotion. *Journal of Consciousness Studies*, 8(12): 79–82.
- Tabachnick, B.G., and Fidell, L.S. (2001). *Using multivariate statistics* (4<sup>th</sup> ed.). Needham Heights, MA: Allyn & Bacon.
- Tabachnick, B.G., and Fidell, L.S. (2007). *Using multivariate statistics* (5<sup>th</sup> ed.). Boston. Pearson education.
- Talvitie, V., and Ihanu, J. (2005). Biting The Bullet: The Nature of Unconscious Fantasy. *Theory&Psychology*, 15(5): 659-678. Sage Publications.
- Tekin, S. and Yaman, S. ( 2008). The Evaluation Scale of in-Service Education Program: The Development of Teachers' Form. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD) (Journal of Ahi Evran University Kirsheir Education Faculty)*, 9(3): 15-22.
- Teremzini, P.T., Springer, L., Pascarella, E.T., and Nora, A. (1995). Influences Affecting the Development of Students' Critical Thinking Skills. *Research in Higher Education*, 36(1).
- Thompson, J.L. (2004). Innovation through people. *Management Decision*, 42(9): 1082-1094.
- Thurschwell, P. (2009). *Sigmund Freud*. (2<sup>nd</sup> ed). New York, U.S.A. Routledge.
- Tirassa, M. (1994). Is consciousness necessary to high-level control systems? PSYCOLOQUY. from <http://psycprints.ecs.soton.ac.uk/archive/00000441/>
- Tobin, K.G., and Capie, W.(1981). The Development and Validation of a Group Test of Logical Thinking. *Educational and Psychological Measurement*; 41: 413.
- Topolinski, S., and Strack, F. (2008). Where there's a will—there's no intuition. The unintentional basis of semantic coherence judgments. *Journal of Memory and Language*, 58:1032-1048.
- Tribus, M. (2004). Consciously Thinking About Consciousness. *Journal of Science Education and Technology*, 13(3).
- Tversky, T., and Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science*, New Series, 211(4481): 453-458.
- Tzelgov, J. (1999). Automaticity and Processing Without Awareness. *PSYCHE*, 5(3). from <http://psyche.cs.monash.edu.au/v5/psyche-4-05-tzelgov.html>



- Velicer, W.F., and Fava, J.L. (1998). Effects of variable and subject sampling on factor pattern recovery. *Psychological Methods*, 3: 231-251.
- Velmans, M. (1999). When Perception Becomes Conscious. *British Journal of Psychology*, 90(4): 543-566.
- Walshaw, M., and Cabral, T. (2005). Reviewing And Thinking The Affect/Cognition Relation. In Chick, H.L., and Vincent, J.L. (Eds.). *Proceedings of the 29th Conference of the International Group for the Psychology of Mathematics Education*, (2005). 4: 297-303. Melbourne: PME.
- Wang, Y., and Ruhe, G. (2007). The Cognitive Process of Decision Making. *International Journal of Cognitive Informatics and Natural Intelligence*, 1(2), IGI Global.
- Weinberger, J. (1992). Validating and demystifying subliminal psychodynamic activation. In Bornstein, R.F., & Pittman T.S. (Eds.), *Perception without awareness: Cognitive, clinical, and social perspectives* (pp. 170–188). New York. Guilford Press.
- Weinberger, J., and Westen, D. (2008). RATS, We Should Have Used Clinton: Subliminal Priming in Political Campaigns. *Political Psychology*, 29(5).
- Weinner, I.B., Millon, T., and Lerner, M.J. (Ed) .(2003). *Handbook of Psychology: Personality and social Psychology*, (Vol. 5). New Jersey. USA. JohnWiley & Sons.
- Westen, D. (1999). The scientific status of unconscious processes: is Freud really dead? *Journal of the American Psychoanalytic Association*. 47: 1061-1106.
- Westen, D. (1998). The scientific legacy of Sigmund Freud: Toward a psychodynamically informed psychological science. *Psychological Bulletin*. 124, 333–371. American Psychological Association.
- Westen, D. (2006). Implications of research in cognitive neuroscience for psychodynamic psychotherapy, *Focus -American Psychiatric*, 4(2): 215-222.
- Westen, D., Gabbard, G.O., and Ortigo, K.M. (2008). Psychoanalytic Approaches to Personality. In Oliver, J. P., Richard, R. and Lawrence, P (Eds.), *Handbook of Personality: Theory and Research*, (3<sup>rd</sup> ed.) (pp. 61-113). New York: Guilford.
- Wilson, T.D. (2002). *Strangers to Ourselves: Discovering the Adaptive Unconscious*. USA. Cambridge, Massachusetts: Belknap Press of Harvard University Press

- Winkielman, P., and Berridge, K.C. (2004). Unconscious Emotion. *Current Direction in Psychological Science*, 13(3): 120-123.
- Winkielman, P., Berridge, K.C., and Wilbarger, J.L. (2005). Unconscious affective reactions to masked happy versus angry faces influence consumption behavior and judgments of value. *Personality and Social Psychology Bulletin*, 31: 121-135.
- Wittgenstein, L. (1961). *Tractatus Logico-Philosophicus*. London. Routledge and Kegan Paul. Translated by D.F. Pears and B. McGuinness, from <http://www.elsevier.com/locate/newideapsych>
- Yaman, S. (2005). Effectiveness on Development of Logical Thinking Skills of Problem Based Learning Skills in Science Teaching. *Journal of Turkish Science Education*, 2(1).
- Yavaşca, Ö. (2001). *Imam Ghazzali: Moral and Religious Education*. Degree-Thesis. University of Suleyman Demirel. Turkey.
- Yürümezoğlu, K., and Oğuz, A. (2007). How Close Student Teachers' Educational Philosophies and Their Scientific Thinking Processes in Science Education. *Actualité de la Recherche en Education et en Formation*, p.17 Strasbourg. France.
- Zajonc, R.B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35, 151–175. American Psychological Association.
- Zanga, A., Richard, J.F., and Tijus, C. (2004). Implicit learning in rule induction and problem solving. *Thinking & Reasoning*, 10(1): 55-83
- Zhang, L.F. (2006). Thinking styles and the big five personality traits revisited. *Personality and Individual Differences*, 40: 1177–1187.
- Zimmerman, B.J. (1989). Models of self-regulated learning and academic achievement. In Zimmerman B.J., & Schunck, D.H. (Eds.), *Self-Regulated Learning and Academic Achievement: Theory, Research, and Practice*. New York. Springer-Verlag.
- Zinchenko, V.P. (2009). Consciousness as the Subject Matter and Task of Psychology. *Journal of Russian and East European Psychology*, 47 (5): 44–7 .M.E. Sharpe.
- Ziori, E., and Dienes, Z. (2006). Subjective measures of unconscious knowledge of concepts. *Mind & Society*, 5: 105-122.
- Zwick, W.R., and Velicer, W.F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, 17: 253-269.