

## INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

**The quality of this reproduction is dependent upon the quality of the copy submitted.** Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

# UMI

A Bell & Howell Information Company  
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA  
313/761-4700 800/521-0600



A COMPARATIVE STUDY OF THE DEVELOPMENT OF EDUCATIONAL  
PSYCHOLOGY IN CHINA AND AMERICA

DISSERTATION

Submitted to

Department of Educational Psychology  
College of Human Resources and Education  
West Virginia University

In Partial Fulfilment of the Requirements for  
The Degree of Doctor of Education

by

Huiping L. Cervenka

Department of Educational Psychology  
West Virginia University  
Morgantown, West Virginia

1997

**UMI Number: 9727670**

---

**UMI Microform 9727670**  
**Copyright 1997, by UMI Company. All rights reserved.**

**This microform edition is protected against unauthorized  
copying under Title 17, United States Code.**

---

**UMI**  
**300 North Zeeb Road**  
**Ann Arbor, MI 48103**

© Copyright 1997

## Acknowledgments

This dissertation is dedicated to my doctoral committee advisors Dr. Sam Stack, dissertation advisor; Dr. Daniel Hursh, committee advisor; to my committee members: Dr. Larry Stead, Dr. Diane Woodrum and Dr. Rogers McAvoy; to my loving husband, Edward Cervenka; my darling son, Fei Yang; my special aunt, Francis Renfro; and my friends Ann Crabtree and Gail Martine. Without your deep understanding and great support, I could have not accomplished this task. Millions of thanks to all of you from the very bottom of my heart.

## Table of Contents

Title Page-----	i
Copyright Page-----	ii
Acknowledgments-----	iii
Table of Contents-----	iv
Abstract-----	v
Chapter One-----	1
Chapter Two-----	19
Chapter Three-----	39
Chapter Four-----	50
Chapter Five-----	70
Chapter Six-----	97
References-----	108
Appendix-----	118

A Comparative Study of the Development of Educational  
Psychology in China and  
The United States

**ABSTRACT**

Huiping L. Cervenka

"Some people argue that Western psychology and Asian psychology are fundamentally different and irreconcilable. Western psychology is scientific and analytic-reductionistic, while Asian psychology is concerned with man's harmony..." (in Paranjpe et al, 1988, p18). This study examines and compares the scientific roots of Western psychology and the humanistic roots of Asian psychology in an attempt to determine commonality between Chinese and American educational psychology.

A historical comparative method is used in this study. Two approaches, the personalistic and the naturalistic are employed to examine the development of educational psychology in China and America. Results show that Western psychology has been more scientifically developed than Eastern, but Chinese psychology, to some extent, also has a scientific heritage from ancient philosophy and Western psychology. This study also shows that educational psychology in both countries is rooted in ancient philosophy, influenced by modern psychology and benefiting from functional psychology.



## Chapter One

### Introduction

Some scholars contend that Western psychology and Asian psychology are fundamentally different and irreconcilable (see Ho in Paranjpe, 1988, p. 18). These scholars assert that Western psychology is scientific and analytic-reductionistic; where one's destiny is fulfilled only with the reunification of the self. They might contend Asian psychology is concerned with the personality growth of the individual, placing emphasis on man's harmony with his fellow men, society, nature, and the cosmos. Some argue there is little or no commonality between Asian and Western conceptualizations of psychological phenomena, therefore, Western psychology is irrelevant and not applicable to Asia.

Superficially there might appear to be a lack of commonality between Asian philosophy and American science, however, the more one learns about Asian philosophy, the more one finds they actually do have much in common. For example, Capra pointed out in his book The Tao of Physics: "The Eastern mystics see the universes an inseparable web, whose interconnections are dynamic and not static. The cosmic web is alive; it moves, grows and changes continually. Modern physics, too, has come to conceive of the universe as such a web of relations and, like Eastern mysticism, has recognized that this web is intrinsically dynamic" (Capra, 1977, p. 178).

There might indeed be a lack of commonality between Asian and Western conceptions of psychological phenomena if one restricts

Asian or Chinese concepts to those inherited from the ancient philosophical traditions compared with Western modern scientific means. Commonality, relevancy and applicability do exist when one compares the two cultures within the same time line. For example, the birthplace of Greek philosophy was the seaboard (the country bordering a seacoast) of Asia Minor, and was closely bound up with mathematics derived from Egypt which later developed into scientific geometry.

Although American educational psychology can be traced to Greek philosophers Socrates, Plato and Aristotle, the more scientific, experimental dimension characterizing educational psychology is traditionally and immediately attributed to Edward L. Thorndike (1874-1949) in America and to the Western influence in China.

Though he was not the first to use the term "educational psychology", Thorndike (1903), was the first person to publish a text entitled Educational Psychology providing the first definition of this discipline. Thorndike viewed educational psychology as the experimental study and measurement of the inherited foundations of intellect, morals, and the skills, the improvement of mental functions and the examination of individual differences and their causes, as our starting point (Tolman, 1938). In this respect, Thorndike's role in the development of American educational psychology is like Plato's who influenced the development of Western philosophy. The major contribution Thorndike made to the

cause of educational psychology was connectionism, which was defined by him as associations between stimulus and response.

The primary concept of connectionism was first expressed by the Greek philosopher, Socrates. Socrates' theory of learning as recollection depended on a typical form of association, association by similarity (Plato, 1902). Plato passed this idea on to his students. Later, Aristotle developed this idea of association into three principles: similarity, contrast, and contiguity, which were supplemented by two other important influences on the strength of a particular association: frequency and ease. (Aristotle, 1902).

In 1690 John Locke (1632-1704) developed this notion as an "association of ideas" in his An Essay Concerning Human Understanding (Locke, 1690). In the 18th century several philosophers turned Locke's "association of ideas" into associationism. The founder of educational psychology, Thorndike transmuted it into connectionism, "a principle which represents the association of stimulus and response or trials and errors" (Thorndike, 1903). Thorndike also turned Locke's association of ideas into the laws of learning; Plato's law of similarity into the generalization gradient; Aristotle's laws of frequency into the gradually rising curve and the contiguity of ideas into contiguity of unconditioned and conditioned stimuli. Cognitive psychologists after Thorndike revived this conception as "an associative network; memory as a network of ideas embedded in a complex information-processing system" (Simon & Newell, 1954).

The measurement of the characteristics of individuals and their learning is always essential in educational psychology in both China and America. Dating back to the Sui dynasty (618-907 A.D.), China developed its civil service examination system for the purpose of measuring the characteristics and learning of certain individuals who applied for government positions. The measurements include: regular examinations; rehearsals of classical works and policy making essays; a committee examination before the emperor; and views on planning and administrative suggestions. "Various methods for measuring the candidates' talent and behavior were invented, such as identifying intelligence by response, speed, eliciting personality across situations, and measuring mental attributes through interviews" (Wang, 1993, p. 89). Some of the above methods are similar to Thorndike's.

Before the introduction of Western, particularly American educational psychology to China, Chinese educators and philosophers developed some psychology in common with Western ideas. Some of the ideas were in tune with Aristotle as well as Plato. However, the emphasis of Chinese traditional thought was to bring cognitive processes under greater voluntary control and to elicit transcendent states of consciousness. An untrained mind was said to be highly distractible, easily captured by any attractive or unpleasant stimulus and overwhelmed by reactions of agitation, desire, and fear. To cultivate one's soul was the major task in the traditional education process.

Modern Chinese educational psychology came into existence after China began to communicate with Western countries during the mid-19th-century, largely through the exposure to American missionaries. Missionaries came to China and built schools along the coastal areas before the Opium War during the 1840s. Psychology courses related to education were offered in some missionary colleges and sponsored by Protestant and Catholic churches from Western countries, especially from America. The first Chinese student who studied psychology in Massachusetts in 1847 was Rong Hong, a missionary school student. Rong's first psychology teacher in America was Rebekah Brown, who introduced him to John Locke's, An Essay Concerning Human Understanding (1690). This work marked the formal beginning of British empiricism and proved to be of great importance in the history of psychology. Rong brought back the ideas he learned in America and began to teach psychology in a missionary school.

Following Rong was Yan Yongjing, also sponsored by an American missionary school. Yan studied psychology at Kenyon College, in Ohio. Yan returned to China to teach as soon as he finished his schooling and devoted himself to teaching psychology in a missionary school. Yan was the first person to publish a translated book of psychology, Mental Philosophy, written by an American preacher, Joseph Haven in 1889. The second translated book in the area of psychology was Locke's An Essay Concerning Human Understanding. This book was translated from a Japanese version by Wang Guowei with a revised title of Educational Psychology in

Chinese. The main content of this book included intellect, sensibility, memory, imagination, desire, and will. These became the foundations of Chinese educational psychology. Both Yan Yongjing and Wang Guowei became the pioneers in Chinese educational psychology. Chinese educational psychology began to flourish soon after the first group of students graduated from American colleges with their degrees in psychology. These students returned to China before the 1940s along with their knowledge derived from their American professors and the works written by them.

Modern Chinese educational psychology officially began when Chinese students graduated from America and returned to China. The first psychological laboratory was founded by these students in 1917. The establishment of the laboratory was proposed by the President Cai Yuanpei, and Cai appointed Chen Daqi, a Ph.D. in psychology from the University of Chicago, to head this laboratory. Chen made significant contributions to the field of modern Chinese educational psychology. During the 1920s with Cai and Chen in the lead, Chinese educational psychologists followed the American structural school closely, with emphasis on insight and experience with Beijing University as the center of structuralism. Cai learned structuralism from Wundt while he studied in Leipzig, while Chen was influenced by J. B. Watson at the University of Chicago who had inherited Wundt's psychology when he was in Germany. With Chen as a director of the psychological laboratory at Beijing University, and Cai as president, structuralism soon became very popular.

Structuralism faded when functionalism emerged. Functionalism began at University of Chicago and was developed further at Columbia University. John Dewey served as the major founder of this school. Many Chinese psychologists received their education from functionalists. They brought back their professor's ideology and became leaders of the Chinese functionalist movement. Books by James, Dewey, and Thorndike were translated into Chinese. Functionalism reached its apogee when Dewey visited China and gave lectures on functionalism as well as pragmatism. The fundamental elements of pragmatism include induction, the importance of human experience, naturalistic humanism, and the relations between science and culture. Both functionalism and pragmatism were in tune with the trends in China at the time and complemented traditional Chinese practical philosophy, which served as a foundation of Chinese Educational Psychology.

Chinese educational psychology and American educational psychology shared the same influence from the philosophy of American pragmatism and psychology of American functionalism. Both pragmatism and functionalism were introduced to China by Dewey from 1919 to 1921 (Westbrook, 1991, p. 196). Due to the fact of the existing practical Confucianism, and the influence from the returned students of Dewey, both pragmatism and functionalism were very well received in China. Resulting from Dewey's visit, the first Department of Educational Psychology was established in Nanking Teacher's College in 1920.

## Significance of the Comparative Study

Through comparative analysis of the historical development of educational psychology in the United States and China, we can gain a better understanding of the past as a guide to the future of this discipline. Comparative analysis allows insight into the cultural, political and social forces shaping attitudes which frame educational psychology, influencing those credited with its development, both East and West.

This dissertation utilizes comparative and intellectual history and examines the differences and similarities of educational psychology as developed in China and America and the degree they affected each other. Specific individuals from China and the United States are discussed within the positions they helped formulate, advance, or destroy. Contemporary influences are discussed in order to demonstrate the continuity of development from old to the new, from foreign to the native.

Two approaches will be taken to this comparative study, the personalistic and the naturalistic. The personalistic conception of educational psychology derives from the standpoint of the massive achievements and contributions of certain individuals. The personalistic and naturalistic intertwine, each influencing the other. To connect specific individuals with certain schools is to recognize their contributions to the cause of educational psychology. This paper will explore the influential persons and events that helped formulate and advance American and Chinese



educational psychology from the past to the present. Philosophers and psychologists who had contributed greatly to the cause of educational psychology will be introduced within the context of each relevant school.

Since this paper is mainly about the development of educational psychology, some of the prominent figures in the field of psychology might not be included. However, this comparative study makes a serious attempt to include those most significant and influential in the development of educational psychology in China and the U.S.

#### Purpose of the Study

The development of educational psychology in China and America is not in total opposition. They both study the functions of the mind and behavior as adaptations and adjustments to the environment; they both emerged from American functionalism and evolved from ancient philosophies.

Comparing the two seemingly opposite cultures and the development of educational psychology in both China and the United States will assist educational psychologists in both countries to understand each other and learn from each other. Comparing the development of educational psychology in both China and America is a means to generate new approaches that reflect both countries. No one country or theory on human learning and development, whether behavioral or cognitive, scientific or non-scientific, Chinese or

American can fully explain human behavior. Human beings are manifold beings who act, feel, and think in relation to situation, therefore, any idea that meets the needs of common people and the development of educational psychology share a common goal.

As a result of this comparison new insight will be gained regarding the concept of educational psychology as an independent discipline in both China and the United States. Through historical comparative study one can examine how cultural and social forces influenced the attitudes that have gone into framing educational psychology and psychology as it is today and how the various facts, methods, and theories interrelate.

The purpose of this comparison is to find out whether the Western psychology and Asian psychology, especially Chinese and American educational psychology are fundamentally different and irreconcilable, or whether there is any commonality between them.

There are six chapters included in this study: Chapter One contains an introduction of the development of educational psychology in both China and America; the significance of the comparative study; the purpose of the study and definitions. Chapter Two will include ancient philosophical influence on the development of educational psychology in China and America which is from 500 B.C. to the Medieval Age (6th to 16th century). Chapter Three is about the philosophical influence of philosophy from Medieval Age to post-Renaissance which starts from 17th to late 19th century. Chapter Four will examine the impact of modern psychology on the development of educational psychology which

covers the period from Post-Renaissance to the early twentieth century. Chapter Five will describe the development of contemporary educational psychology from the 1950s to the present. The last chapter is the conclusion, which will compare Chinese philosophy with Western science; and Chinese educational psychology with American educational psychology.

### Definitions

Behavioral Psychology: contains classical behaviorism, operant behaviorism and purposive behaviorism. Historically, the most important differences among versions of behaviorism is between J. B. Watson's original classical behaviorism and a variety of more sophisticated systems inspired by him, known collectively as neo-behaviorism. Classical behaviorism is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. The study of introspection, mind or consciousness is rejected by classical behaviorism, and there is no dividing line between man and brute. Watson was the first person who declared that psychology is a science of behavior (Watson, 1913).

Buddhism: a religion of the Eastern world. It was originated from the teaching of Guatama Buddha's self-purification. The notion of flow and change are basic characteristics of nature, and "all things arise and pass away" according to Buddha. In order to reach the undivided "suchness", one should follow the four steps:

first, realizing the suffering or frustration; second, find out the cause of the suffering which is inherent in life and that one can be liberated from it by suffering or frustration; third, believe that the suffering and frustration can be ended; fourth, is the realization of noble truth and self-emancipation. The way of life for Buddhists is to find the Middle Way between opposite extremes through right awareness and right meditation. Happiness can derive only through sacrifices but not through a separate individual self (Encyclopedia of Psychology, 1984).

Confucianism: a Chinese philosophy that emphasizes education, social order and daily practical knowledge. It provided Chinese society with a system of education and with strict conventions of social etiquette. Confucianism was more interested in finding truth through reason than Taoism. The standards for being a Confucianist require: patience, compromise, conservation, contentment, reverence for the ancestors, the aged and the learned; and above all, be humane and taking man, not God, as the center of the universe (Feng, 1953).

Cognitive Psychology: as William James sees it, cognitive psychology comprises all mental activity or states involved in knowing and the mind's functioning, and includes perception, attention, memory, imagery, language functions, developmental processes, problem solving, and the area of artificial intelligence. Most of cognitive psychologists agree that explanations of how the mind works need not be behaviorally observable which opposes Watson's definition (James, 1899).

Deductive Method and Inductive Method: deductive method seeks conclusions through reasoning, from general to particular, inference in which the conclusion about particulars follows necessarily from general or universal premises, which is in contrast to the inductive method which is reasoning from part to whole, from particular to general.

Developmental Cognitivism: focuses on the psychological aspects of the knowing process. The theory of stages of cognitive development by Jean Piaget and Erik Erikson has dominated the thinking in this domain. The stages by Piaget are: the sensory-motor, which is from birth to 2. The infant's first knowledge of the external world is based on simple schema, such as the identity and constancy of objects in space and time. But during the next two stages (pre-operational, 2-7 years, and concrete operations (7-11 years) significant steps are taken away from direct perception in the form of symbolic representations of these schema, and the performance of simple, pre-logical operations on these representations. Finally, during the formal operation stage (11-19), the child develops a complex cognitive structure and is capable of prepositional and logical thinking (Piaget, 1954).

Erikson's eight stages are: (1) the oral-sensory stage; (2) the muscular-anal stage; (3) the locomotor-genital stage; (4) the latency period; (5) the puberty or adolescence; (6) young adulthood; (7) adulthood; and (8) maturity and old age. Each

stage has its accompanying psychological crisis with its desired developmental outcome (Erikson, 1968).

Educational psychology: psychology concerned with human maturation, school learning, teaching methods, guidance, and evaluation of aptitude and progress by standard tests. Thorndike viewed educational psychology as the experimental study and measurement of "the inherited functions of intellect, morals, and skills," "the improvement of mental functions," and the examination of "individual differences and their causes". The method educational psychology uses is "of exact science" (Thorndike, 1903).

Empiricism: is the epistemological doctrine that knowledge arises from, and is grounded in sense perception. The methods for empiricism are observation and experiment. To some extent, empiricism contrasts with rationalism, which holds that reason, not observation, provides the surest grounding of knowledge (Webster's Dictionary, 1986).

Existentialism: for both existential psychologists and philosophers, existentialism stresses the pursuit of values of self-actualization, the development of personal freedom, the centrality of love, caring for others, the concern for the ultimate meaning of life, and the ability to cope with the stresses and strains of everyday living in a harmonious way. Existential psychology is not a set of new techniques but a concern with the understanding of the structure of the human

being and his experience that must underlie all techniques (Encyclopedia of Psychology, 1984).

Functionalism: in philosophy, functionalism is a theory that stresses the interdependence of the patterns and institutions of a society and their interaction in maintaining cultural and social unity or functional relations. In psychology, functionalism is, as the name suggests, concerned with the mind as it functions or as it is used in the adaptation of organism to its environment (Hothersall, 1990).

Gestalt Psychology: the study of perception and behavior from the standpoint of an organism's response to configuration wholes with stress on the uniformity of psychological and physiological events and rejection of analysis into discrete events of stimulus, precept, and response. In other words, perceptual experiences should be accepted as they are rather than reduced to any presumed elements; the whole is more than the sum of its parts. Gestalt psychologists denounce conditioning by mere repetition as the lowest form of learning and oppose it with learning through understanding (Hothersall, 1990).

Idealism: reliance on reason of finding truth, a theory that reasoning and experience rather than non-rational are the sources of knowledge and the fundamental criteria in the solution of problems.

Operant Behaviorism: according to Skinner, all organisms, including humans, are greatly influenced by the consequences produced by their own behavior. The environment is the cause of

the changes that occur in the way a person behaves (Skinner, 1966).

Pragmatism: The root of the word "pragmatism" is a Greek word "pragma" meaning "work". Pragmatism is a philosophy that encourages people to seek an efficient and ethical way to achieve their goals (Ozmon & Craver, 1995).

Psychology: the study of mind and behavior in relation to a particular field of knowledge or activity (Webster's Dictionary, 1986).

Purposive Behaviorism: a purpose is a demand to get to or from a given type of goal-object. Organisms have a readiness to learn to select responses, because the response is more efficient in getting the organism to some purposes. The distinction between purposive behaviorism and other behaviorism is that the former is molar, the latter is molecular (Tolman, 1967).

Science: 1. The state of knowing: knowledge as distinguished from ignorance or misunderstanding; 2. Knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method; 3. such knowledge concerned with the physical world and its phenomena called natural science; 4. a system or method reconciling practical ends with scientific laws (Webster's Dictionary, 1986).

Structuralism: founded by Wundt, structuralism studies the subjects of conscious experience and experimentally investigates the structure of consciousness. The objective of structuralism is to analyze conscious experience into its components using highly



refined forms of introspection. Structuralism is closely related to existentialism (Schultz, 1975).

Tao: As originally used by Taoists, it means the Way, the process of the universe, the order of nature, the complete, the all-embracing and the whole. It was later adopted by Confucianists as the way of life, the way of human society and the ideal standard in a moral sense (Capra, 1977).

Taoism: Traditional Taoism was one of the major philosophies in China. Taoism is a mystical and empirical philosophy traditionally founded by Lao Tzu in sixth century. Like empiricism, it mistrusts the theory of knowledge based on reasoning. Transformation and change are the two essential features of nature as the Taoists view it. Taoism believes that the movements of the Tao are a continuous interplay between opposites, and harmony derives from the balance of the two opposites. It is a liberation from the strict rules of convention. The philosophical Taoism was later developed into a religion concerned with obtaining long life and good fortune by magical means and herbs. Confucianism later changed the Taoist's conception on balance between opposites into a way of harmony for maintaining social order (Capra, 1977).

Yin and Yang: represents two poles which set the limits for the cycles of change: the yang having reached its climax retreats in favor of the yin; the yin having reached its climax retreats in favor of the yang. The original meaning of the words yin and yang was that of the shady and sunny sides of a mountain. Yang also

represents the strong, male, creative power related to the heaven, whereas, yin, the weak, female, receptive power and associated with earth (Feng, 1953).

## Chapter Two

### The Beginning of Philosophical Psychology

(From about Sixth Century B.C. to Sixteenth Century A.D.)

Broadly speaking, the same kinds of questions now asked in the field of educational psychology, as well as psychology, dealing with nature and nurture were asked centuries ago. The current debate between cognitivism and behaviorism is a continuation of the debate between nature and nurture, and between empiricism and nativism. The important difference between now and then is not so much the kinds of questions asked but the methods used to seek the answers.

American educational psychology involves two schools of psychology: cognitivism and behaviorism. Cognitivism originated from nativism and behaviorism from empiricism. James addressed the two trends as the "tender-minded" and the "tough-minded". The tender-minded philosophers before Socrates considered animate nature to be different from the inanimate mainly in two particulars, for example, in movement and sense perception. And these are the two traditional characteristics of the soul. What is soul? Some Greek philosophers regarded the soul as a unit, which knows all things and consists of all the elements, i.e. earth, fire, water, wind and space. Others held that the soul is composed of contraries, such as heat and cold or similar

opposites. Though the Greek philosophers before Plato differed as to the elements of the universe, they all held it to be material. The antithesis between soul and matter had not yet been grasped. Yet this primary stage cannot be omitted from the history of psychology.

They might be considered as materialists in the sense that they tried to explain the origin of all things out of some material elements, but they were not real materialists in the sense of deliberately denying a distinction between matter and spirit. As primitive materialists, their notions had profound influences on the modern philosophers and psychologists. Take the conflict and dialectical theory for example. Both had a great impact on the Western philosophers such as Hegel and Marx, and from Marx to Mao in China. Mao embraced the conflict and dialectic theories and traditional Chinese heritage.

The philosophers before Taoism and Confucianism in China had the same explanations about soul, except they used the word "ultimate" instead. Ultimate consists of everything in opposition to each other, which is called the "Yin" and "Yang". The dynamic character of Yin and Yang is illustrated by the ancient Chinese symbol called "diagram of the Supreme Ultimate" which described the interplay of the ultimate as: the Yang having reached its climax retreats in favor of the Yin; the Yin having reached its climax retreats in favor of the Yang. The two dots in the diagram symbolize the idea that each time one of the two forces reaches its extreme, it already contains in itself the seed of its

opposite. Transformation and change are the essential features in Ultimate, and the essence of the ultimate is the unity and mutual interrelation of all things and events to them. The pair of yin and yang is the grand leitmotiv that permeates Chinese culture and determines all features of the traditional Chinese way of life. To the Chinese people, life is the blended harmony of the yin and yang. The theory of yin and yang was later fully developed by the Taoists and also penetrated the Buddhists' philosophy: "What is meant by the soul as suchness, is the oneness of the totality of all things, the great all-including whole" (Ashvaghosha, 1900, p. 34). The form of wholeness became the principle of one of the Western psychologies, German Gestalt psychology.

-----  
Insert the "Diagram of the Supreme Ultimate" about here  
-----

The Greek philosopher Socrates regarded soul as reason or truth. From Plato's Theatetus, one learns that Socrates sought truth everywhere. Through dialectic or conversation with his students in the classroom, Socrates found truth. Truth, to Socrates, cannot be defined by an absolute authority but rather lies hidden in every mind, and man is the measure of all things (Plato, 1895, p.571). Socrates called his method "midwifery." A method Aristotle declared as "inductive arguments" (Copleston, 1963, p. 104), in terms of getting others to produce true ideas in their minds with a view to right action. He wanted to give

birth to true ideas in the clear form of definition. This method had great impact on the American discovery learning.

The same as the Chinese Taoists, Socrates believes in relativity and motion. He taught his students that all things are relative, there is no one or self-existed thing. "There cannot be anything sweet which is sweet to no one.... You can not rightly call anything by any name, such as great or small, or heavy or light, for the great will be small and heavy light". Though Socrates is mainly a nativist, this paragraph shows a trait of a empiricist or associationist, which had great influence on Einstein's theory of relativity in modern physics and laid the foundation for Thorndike to develop his theory of connectionism in educational psychology.

Socrates was the first person who discovered the truth of association of ideas. He once told his students "We should agree, if I am not mistaken, that what a man recollects he must have known at some previous time" and "recollection is most commonly a process of recovering that which has been already forgotten through time and inattention" (Plato, 1892, p. 60). This idea was inherited by Aristotle, who invented the principles of association-similarity, contrast and contiguity (Aristotle, 1902, p. 429).

On the one hand, Socrates' philosophy agrees with Confucius, but on the other hand, he agrees with Chuang Tzu. The statements from Aristotle on the judgment of man almost duplicate Confucius' sayings "man is the measure of all things";

"perception is knowledge;" and "To my self I am judge of what is and what is not to me" compare to Confucius' saying "If man measures man by the standard of absolute standard of righteousness, then it is difficult to be a real man. But if he measures man by the standard of man, then the better people will have some standard to go by" (Creel, 1953, p. 84). Socrates used oneself as standard to measure others and Confucius used others as a standard to measure oneself. One focuses on individualism, the other on collectivism.

In terms of relativity and change, the Taoist, Chuang Tzu, had the same notion as Socrates. Chuang said: "From the point of view of things, everything values itself and considers others worthless...if we say a thing is great because it is considered great by something, then everything is great...if we say a thing is right because it is considered right by something, then everything is right...any word can be the predicate of anything. "Similarly, because of the right there is a wrong, because of the wrong there is the right. But when one looks at things from the objective point of view things might be different" (Feng, 1953, p. 130).

With a predominant interest in ethical conduct, Socrates saw that universal definition or concept affords a sure rock on which men could stand amidst the sea of the Sophist relativistic doctrines. According to a relativistic ethic, justice, for example, varies from city to city, community to community: we can never say that justice is this or that, but if we can once attain

to a universal definition of justice, which expresses the innermost nature of justice and holds good for all men, then we have something sure to go upon (Plato, 1888, p. 152). Though Socrates is mainly a nativist, this paragraph shows that he is not a pure nativist, neither he is a relativist, but he did has some thoughts similar to empiricism.

As a nativist, Socrates believed that truth was inborn, that logic produces true answers. Confucius indicated that truth doesn't depart from human nature. Chinese Taoists believe that human intellect can never comprehend the Tao. As the Taoist Chuang Tzu stated: "The most extensive knowledge does not necessarily know it; reasoning will not make men wise in it. The sages have decided against both these methods" (Creel, 1953, p. 20).

Logical reasoning was considered by the Taoists as part of the artificial world of man, together with social etiquette and moral standards. Unlike Confucianists, Taoists' interest was in the observation of nature in order to discern the characteristics of the Tao. Both Western philosophy and Eastern philosophy acknowledge the existence of contradiction, but while the Western philosophy stops at the stage of confrontation of the conflict, Taoism stresses the maintenance of a dynamic balance between contradictions.

The Taoists saw all changes in nature as manifestations of the dynamic interplay between the polar opposites yin and yang, and thus it derived the idea that any pair of opposites



constitutes a polar relationship where each of the two poles is dynamically linked to the other. From this notion, the Taoists deduced two basic rules for human conduct: whenever you want to achieve anything, you should start with its opposite. Whenever you want to retain anything, you should admit in it something of its opposite (Capra, 1977, p. 98). They believe that whenever a situation develops to its extreme, it is bound to turn around and become its opposite.

In order to discern the characteristics of the Tao, the Taoists carefully observe the nature and find truth from it. From observation Chuang Tzu concluded: "In the transformation and growth of all things, every bud and feature has its proper form. In this we have their gradual maturing and decay, the constant flow of transformation and change" (Chuang, 1972, p. 31).

Regarding the word "form", Plato had a different point of view. He disagreed the theory of knowledge deriving from sensations, but believed that knowledge came from the processes of reasoning about sensations. When he compared the difference between sensations and forms, Plato indicated that sensations corrupt, decay, and die. They are unstable, but the ideas are more real and permanent (Plato, 1888, p. 152-164). The difference between the two philosophers on the notion of form is that Chuang considered form as matter, and truth was derived from observation of matter as Aristotle did, while Plato and Confucius treated the highest degree of form as truth. According to Plato, truth is

perfect and eternal; it cannot be found in the world of matter, which is imperfect and constantly changing.

In the Republic, Plato described the separation of the world of ideas from the world of matter. The world of ideas, or forms, has the good as its highest point, the source of all true knowledge. People need, as much as possible, to free themselves from a concern with matter so they can advance toward the good. This can be done by transcending matter through the use of the dialectic in which one moves from opinion to knowledge (Plato, 1892, p. 61). This also shows the different attitudes toward matter between nativism and empiricism.

Science might be defined as knowledge distinguished from ignorance. Plato dedicated himself to educating ignorant in order for them to find truth. One of the methods Plato preferred was argument. Similar to the way Taoists reconcile conflict, Plato believed that, given ample time to argue their positions, the two discussants would come closer to agreement, or synthesis, and therefore closer to truth. Another way is guidance. In the Allegory of the Cave (Plato, in Sahakian, 1981, p. 9), Plato depicted prisoners chained in a world of darkness imagining the sunshine outside the cave, like common people live in shadows and chained by their ignorance, seeking for guidance. The philosophers with knowledge are responsible for educating the ignorant.

The debate over the contributions and importance of nature (the genetic constitution) and nurture (the environment) to

development and individual differences officially started from Plato and Aristotle. Plato favored a genetic position, stressing the importance of nature, the individual difference in temperament, character, and ability. For Plato the only way to increase the accuracy of human knowledge is through measurement and deductive reasoning. Plato wondered that if human geometers could measure the earth, could the human psyche also be measured? Through reasoning, Plato found his answer. Since the location of reasoning is in the head, courage in the chest, and appetite in the abdomen, for evaluating human differences, one simply needs to measure different parts of their bodies (Plato, in Sahakian, 1981, p.9). Through careful analysis, Plato found that people differ in their skills, abilities, talents, and aptitudes. In The Republic, Plato divided people into three classes based on their abilities: workers, auxiliaries, and guardians based on their ability. This notion influenced Thorndike's educational psychology indirectly, in terms of mental measurements and intelligent tests in educational psychology.

As Ozmon and Craver point out: "Plato influenced almost all philosophers who came after him, whether they supported or rejected his basic ideas. Indeed, there is a great deal of merit in the observation by philosopher Alfred N. Whitehead that modern philosophy is but a series of footnotes to Plato" (Ozmon & Craver, 1995, p. 30). This is also true with respect to Thorndike

who played the same role in the development of educational psychology as did Plato in the history of Western philosophy.

Similar to Plato's nativist theory, Confucius proposed a common heritage of human nature, upon which personal development and mental change could be based through learning. According to Confucius, intelligence had four aspects: a cognitive state, an attitude, an ability, and a stream of thinking (Wang, 1993, p. 88). While Confucius implied the importance of inborn nature, one of his disciples, Mencius, stated that man was born originally good. Since man was originally good, it was unnecessary for him to study and experience. Since man was born good, he possessed the ability of telling right from wrong. If he desired to be virtuous, he needed only to cultivate his original nature, which is very similar to Socrates' theory of comparing the role of a teacher to a midwife.

The two major emphases of nativist philosophy of education include: searching for truth and character development. Plato believed that truth could not be found in the world of matter because the material world is impermanent and ever-changing. Confucius said that the superior man seeks the Way, or the truth, and not a mere living. There may be starvation in farming, and there may be wealth in the pursuit of studies. The superior man worries about the Way and not about Poverty (Creel, 1953, p. 34). Confucius was also the first one to state individual differences. He classified people on the basis of their intelligence into three categories: People of great wisdom, people of average

intelligence, and people of little intelligence. He indicated personality assessments as a guideline for education purposes. He once told his pupils "as student Qui is timid, we should give him a lot of encouragement; while student Yiu is aggressive, discouragement is then needed". Confucius emphasized character development and humanity. Confucius advocated nature but not denying nurture.

The seemingly opposite theories of Confucianism and Taoism in China in many ways reconcile each other. Even the founders of the two schools admired each other and adopted each other's ideas. There is a story about the two philosophers:

Confucius went to Pei to visit Lao Tzu, and on returning from this visit, Confucius did not speak for three days. A disciple asked him, saying, "Master, when you saw Lao Tzu, in what way did you admonish him?"

"I saw a dragon," replied Confucius, "a dragon which by convergence showed a body, by radiation became color, and riding upon the clouds of heaven, nourished the two principles of creation. My mouth was agape: I could not shut it. How then do you think I was going to admonish Lao Tzu?"

From Lao Tzu, Confucius learned "Tao", and adopted this word in his own writing.

Since Confucianism was generally emphasized in the education of children who had to learn the rules and conventions necessary for life in society, and Taoism was pursued by older people in order to regain and develop the original spontaneity which had been

destroyed by social conventions, the Chinese people combined the two trends of thought in philosophy. As Capra pointed out in his The Tao of Physics (Capra, 1977, p. 91): "Confucianism was rational, masculine, active and dominating. Taoism, on the other hand, emphasized all that was intuitive, feminine, mystical, and yielding." Confucianism possessed the characteristics of Yang, while the Taoism was Yin. Yang, the strong, male, creative power, was associated with heaven, whereas Yin, the dark, receptive, female and maternal element, was represented by the earth. Taoists believed that by displaying the feminine, yielding qualities of human nature, it was easy to lead a perfectly balanced life in harmony with the Tao.

Somewhat different from Plato and Confucianism, but more in common with Taoism, Aristotle held an environmentalist position, considering nurture as an important factor. He explained that ideas may be important in themselves; a proper study of matter could lead us to better and more distinct ideas. Aristotle felt that the most important questions people ask about things relate to their purposes. To Aristotle, each thing has a purpose or function. Aristotle believed that since humans are the only creatures endowed with the ability to think, their purpose is to use this ability. This anticipated Dewey's functionalism and Tolman's purposive behavior.

Aristotle was the first person in the West who took an inductive, observational and environmental approach (he experimented on chickens), stressing the importance of nurture but

not denying nature. Though he was a believer of Plato in some other areas, Aristotle was the first person who took an empirical approach (Hothersall, 1990, p. 22). He outlined three levels of life: nutritive (plants), sensitive (animals), and rational (humans). This conception of a scale of nature has been a major influence on biologists throughout the centuries, which includes the evolutionist Charles Darwin (Darwin, 1889, p. 530).

Aristotle developed some basic principles of human memory that are still fundamental to contemporary psychologists. It was Aristotle who first used the lasting metaphor of the mind at birth as a "blank tablet" or "tabula rasa" to be filled by experience. He said: "It must be that the case here is similar to that of the tablet on which nothing has been actually written." (Aristotle, 1902, p.430). Aristotle described his three basic associative processes of memory, which reflected the conception of Socrates. He said that there is no memory of the present in the present moment, but there is perception of the present, expectation of the future, and memory of the past (Aristotle, 1902, p. 12). The three principles Aristotle created further explaining this theory are: "similarity," "contrast," and "contiguity" (Aristotle, 1902, p. 11). He indicated that "objects, events, and people are linked through their relative similarity to one another". Aristotle believed that "things are associated if they occur together in time and space". Regarding the strength of a particular association, Aristotle focused on two aspects: frequency and ease. He stated that "the more often a particular experience is

repeated, the better it will be remembered". This law of association has been developed into connectionism by Thorndike in his educational psychology in the twentieth century.

Around 500 B.C. Chinese philosophers began to apply philosophy to the educational setting. This lasted until the 1840s when Western thought on education was introduced. The subject matter of educational psychology is how human behavior develops and is learned and implications of this for educating people. Modern Chinese educational psychology was based on education and philosophy. The three greatest philosophers who laid the foundation during the time range of Plato and Aristotle in the West were Confucius, Mencius (371-289 B.C.), and Hsun Tzu (298-238 B.C.) in ancient China.

A systematic theory stressing that the mind is the product of the body, and that the endowment of human nature can be modified by external influences, was developed by the philosophers Mencius and Hsun Tzu. Mencius represented the left wing of Confucianism, while Hsun Tzu represented the right wing. Mencius differed from Hsun Tzu because of his emphasis on individual freedom and Hsun Tzu's emphasis on external control. Hsun Tzu considered human nature as originally evil, which was in opposition to Mencius' theory that human nature was originally good. In discussing the relationship between cognition and behavior, Hsun Tzu argued for a kind of interdependence between them. Hsun Tzu viewed the nature of man as evil and his goodness acquired through training. According to Hsun Tzu, nature is the



unwrought material of the original; what are acquired are the accomplishments and refinements brought about by culture. Without nature there would be nothing upon which to add the acquired, nature could not become beautiful of itself. Further, he believed that humans cannot live without some kind of social organization. The reason for this is that, in order to enjoy better living, men have need of cooperation and mutual support. Learning is essential to Hsun Tzu. Mencius believed in innate, saying that man was born with four constant virtues which are filial, loyalty, caring, and honesty. By fully developing them, he becomes a sage (Feng, 1953).

The early Medieval Age, from the beginning of the ninth century to around the year 1000 A.D., is often considered the Dark Age of Western civilization. However, influenced by Plato, in the fourth century, a religious philosopher stood out the first time seeking for truth by looking inward. Saint Augustine (354-430), the Bishop of Hippo, started questioning the cause of human actions and conduct. In his Confessions (Augustine, 1912, p. 397) Augustine disclosed his own emotions, thoughts, motives, and memories, which included his passions and temptations of a mistress. For this work Augustine was called the first modern psychologist by Misiak and Sexton in their book History of Psychology (Misiak et al, 1966). In the thirteenth century Thomas Aquinas (1225-1274) reinterpreted Aristotle and firmly established scholasticism, the discipline that readmitted human reason as a complement to religious faith in the search for truth. However, with its emphasis on faith and acceptance of papal authority,

scholasticism was not conducive to the development of formal science, though it did set the stage for a reawakening of intellectual activity (Aquinas, 1951).

While the Western world was suffering from the consequences of war between France, England, and Italy and the horrors of the black death, China was experiencing her peak of cultural, economic, military, and administrative achievement. More significantly, the imported religion of Buddhism began to flourish under the regime of the Tang dynasty.

The beauty of Buddhism is that the triple streams of philosophy, religion, and psychology merge, producing an empirical analysis of man's psychological nature. The goal for Buddhism is to find a way out of suffering. The method the Buddhists use is an empirical approach-observation directed outward as well as inward. The Buddha, who lived between 563-483 B.C., believed that man's suffering encountered in daily existence is a consequence of craving, which was born out of the illusion of permanence and ego-centeredness but not an unchanging or permanent soul. Therefore, the solution to the problem of suffering is to overcome the obstacles and obsessions that stand in the way of attaining the state of transcendence.

Combining Taoism, Confucianism and the newly imported Buddhism, the philosophers in this era developed a new philosophy, neo-Confucianism, which embraced the thoughts of Buddhism, Taoism and classical Confucianism.

In the West a neo-Platonic nativism was long dominant, but began to decline in the thirteenth century as Aristotle's works were recovered. Aristotle, while retaining a certain degree of Platonism, was fundamentally an empiricist, and his ideas were revived by Aquinas. The empiricism versus nativism debate began in the sixteenth century, when Rene Descartes reformulated nativism, and John Locke reformulated empiricism. Within empiricism there are two schools moderate and extreme. A moderate empiricism maintains that all ideas come from perception, but concedes that the machinery of the mental faculties such as memory, imagination, and language are innate. Extreme empiricists, such as John S. Mill, claimed that not only the content but also the process of mind are learned.

In China during this period, the neo-Confucianist, Chu Hsi (1130-1200), created a new orthodoxy-neo-Confucianism. This philosophy is an all-embracing system of thought. It is more systematic and more complete than the ancient classics and by reinterpretation of them, gave Confucianism more metaphysical content than it had had before. Chu Hsi's historical role in China is like that of Aquinas in the West, in terms of the combining of seemingly contrasting ideas. Aquinas maintained that the soul has an inner knowledge that can be brought out through careful observation of the material nature of the individual and educating the soul.

Chu Hsi ordered his students to examine things in order to cultivate oneself. To Chu Hsi (Feng, 1953), each separate type or

category of thing has its form, and each form is a manifestation of the Supreme Ultimate, subsisting beyond time and space. Physical matter or material things must follow the rules of the Supreme Ultimate, which is in accordance with Aristotle. A house, for example, may be made of brick material, but they must be put together according to a plan form. The form must be consistent with the Ultimate Supreme. For the individual, Chu Hsi's notion of material and spirit was essentially monistic rather than dualistic, the form and material things being complementary and harmonious. This notion is similar to Western ancient metaphysic philosophers who treated materials as human and modern materialistic philosophers and psychologists who consider human as machines.

In dealing with the ethical problem of evil, Chu Hsi asserted "man's instincts are fundamentally good" that there is no active principle of evil (Fairbank, 1972). Evil results from situations which arise; in other words, dirt is not dirt but only something in the wrong place. In contrast to the Western conception of original sin, Chu Hsi advocated Confucius' doctrine of original goodness of man. Chu Hsi urged his students to achieve the sincerity of heart by observing the external objects, "the investigation of things" (Fairbank, 1972, p. 59), after which one might proceed to the understanding of one's self. This part is more empirical than native.

After the expulsion of the Mongols and the re-establishment of Chinese control over China under the Ming Dynasty (1368-1644),

Chu Hsi's neo-Confucianism, because of its very inclusiveness, became a straight jacket on the Chinese mind. The Ming rulers used it as a tool of government and Chu Hsi's system became a dogma.

In the sixteenth century a new school of Confucian philosophy led by Wang Yangming (1472-1529) arose. Similar to Aristotle, Wang Yangming asserted that men have a common moral nature and each individual has intuitive moral knowledge within his own mind. The possibilities of sagehood lie within him thus his task is to achieve a moral self-reformation. This is to be done mainly through study, but study must include thought, reflection, and the unending search for truth, not as mere verbal formulas but through personal experience, or in today's terms, through practice. This pragmatic point of view is carried on by the modern Chinese philosophers, which helped to build the foundations for the adoption of Dewey's pragmatism and functionalism in the 1920s.

Until the late medieval times, China was at least on a par with and in many ways ahead of Western countries in technological inventiveness and systematic observations of nature. China led the way in development of paper and printing, which helped to boost the Western Renaissance, including psychology. During the late Renaissance, an author named Rudolf Goeckel (Lapointe, 1970, p. 23) published in the year of 1590, the first psychology book entitled Psychology about the Perfectibility of Man. When Western

countries leaped forward in science and technology, China lagged behind.

## Chapter Three

### **The Beginning of Scientific Philosophy (From Seventeenth Century to Nineteenth Century)**

In terms of science, the theologian-philosophers before the seventeenth century were interested principally in the material world and its relationship to divine origin. During the Sixteenth century, the Italian Renaissance began to emerge in the West. The Renaissance philosophers, while not denying that Nature has a divine origin, shifted their interests to the quantitatively determinable immanent structure of the world and of its dynamic process. In early seventeenth century, influenced by Italian astrophysicist Galileo Galilei (1564-1642) and English mechanist and physicist Sir Isaac Newton (1624-1727), a French mathematician and philosopher, Rene Descartes (1596-1650) tried to do for the human body what Newton had done for light, that is, to divide the human body into different parts. This was the model of the mind used for modern behaviorists in the twentieth century.

Before the Renaissance, there was no very clear distinction made between physical science and philosophy. The former was known as natural philosophy or experimental philosophy. There was no really empirical study of psychology in the sense of a science distinct from other sciences and from philosophy. The influence of the scientific moment of the Renaissance was of great

importance in determining the direction of philosophical psychology in the seventeenth century.

A scientific tradition was not the only thing Western psychology inherited from the Renaissance and post-Renaissance age. Psychology also inherited its philosophical foundations from Descartes. Descartes wrote a book on The Passions of the Soul (1692, p. 292), and proposed a theory to explain the interaction between mind and body in a mechanical way. It was Descartes who set the stage for psychology as a discipline independent of other sciences by stating that the mind is separate from the body and is subject to its own rules. These rules in turn helped to deepen the controversy between nature and nurture theory.

Among the British philosophers one can find a marked interest in psychological questions. The leading empiricists, John Locke (1632-1704), George Berkeley (1685-1753), David Hume (1711-1776), David Hartly (1705-1757), James Mill (1773-1836) and German nativist Immanuel Kant (1724-1804) all dealt with problems of knowledge. They tended to treat these problems from a psychological rather than from a strictly epistemological point of view. That is to say, they concentrated their attention on the question, how do ideas arise? And this is obviously a psychological question.

The Chinese trend at this point was represented by Wang Shouren (1472-1528), Wang Fuzhi (1619-1675), Ren Yuan (1613-1682), Kang Youwei (1858-1927), and Tan Tsitong (1865-1898).



A scientist such as Galileo who was concerned with bodies in motion, could confine himself to the material world and to questions of physics and astronomy. But the view of the world as a mechanical system raised problems which the metaphysical philosophers could not invade. Since man is a being within the world, the question arises whether or not he falls wholly within the mechanical system. There are two possible general lines of answer. On the one hand the philosophers may defend the view that man possesses a spiritual soul, endowed with the power of free choice, and that in virtue of his spiritual and free soul he partly transcends the material world and the system of mechanical causality. On the other hand, he may extend the scientific conception of the material universe to include man as a whole.

Descartes was convinced of the truth of the first answer, though he spoke of mind rather than of soul. Before Descartes, people looked to the past for answers, to the works of Plato, Aristotle, and other ancient scholars. Things were changed from the seventeenth century on, when Descartes' developed theory on the mind-body problem, a controversial issue for centuries. Scholars throughout the ages have argued over the question whether the mind and body, the mental world and the material world, are two totally different essences or natures. Descartes was the first to offer an approach to the mind-body problem that focused attention on a strictly physical-psychological dualism. In so doing, Descartes shifted the world's attention away from the study of the soul, in its abstract sense, to the function of

it. As a result, methods of inquiry changed from metaphysical analysis and philosophical deduction to scientific induction and objective observation (Descartes, 1892).

Descartes (Descartes, 1892) was strongly influenced by the mechanist ideas of his age. He found resemblance between the operation of machines and human bodies. The statues and figures were caused to move in the absence of voluntary action on their parts, and this was reflected in Descartes' observation that movements of the body frequently occurred without conscious intention on the part of the individual. From this picture, he created the notion of undulation reflex, a movement not supervised or determined by a will to move, known as the theory of reflex action.

Another relevant theory of Descartes was the differences between derived ideas and innate ones, which has been the essence of debate between cognitivists and behaviorists for years. Descartes believed that the mind gave rise to two different ideas, derived and innate, known as nurture and nature. Derived ideas were produced by objects as external stimuli, they were products of experiences of the senses. Ideas other than these were called innate. Innate ideas were independent of sense experience. They were products of mind or consciousness. This notion of innate ideas was carried on by the modern Gestalt and cognitive schools which will be discussed later. The inborn idea was attacked severely by the British empiricists and the derived idea was carried on by them and passed to the behaviorists.

Empiricism was developed in depth by John Locke (Locke, 1690). The work that marked the formal beginning of empiricism was An Essay Concerning Human Understanding by Locke in 1690. In his essay, Locke indicated that all knowledge was empirically derived. In an often quoted paragraph Locke said: "Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas: How comes it to be furnished? Whence comes it by that vast store which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from experience" (Locke, in Sahakian, 1981, p. 22).

Like the way Descartes divided knowledge into two kinds, inborn and derived, Locke divided experience into two kinds, one derived directly from sensation and the other from reflection. Locke also made the distinction between simple and complex ideas. Simple ideas derived from both sensation and reflection, which were received passively by the mind in the simplest form. Through the process of reflection and combination of the simple ideas, the mind built up the complex ideas. Complex ideas can be analyzed according to Locke (Locke, 1690).

Another British philosopher, David Hume, reemphasized Locke's notion of the compounding of simple ideas into complex ideas, developing and making more explicit the notion of association. The most important contribution Hume made to educational psychology was the clear distinction he drew between

impressions and ideas. Hume (Hume, 1739, p. 2) believed that "impressions were the basic elements of mental life and ideas were the mental experience in the absence of any stimulating object. Impressions were strong, while the ideas were weaker by comparison".

Furthering his notion of association of ideas, Hume explained in detail (Hume, 1739, p. 3) "the resemblance, contiguity, cause and effect". He said: "It is plain, that in the course of our thinking, and in the constant revolution of our ideas, our imagination can be easily shifted from one idea to any other that resembled it, and that this quality alone was to the fancy a sufficient bond and association. It was likewise evident, that as the senses, in changing their objects, were necessitated to change them regularly and took them as they lied contiguous to each other. The imagination must by long custom acquire the same method of thinking, and ran along the parts of space and time in conceiving its objects. As to connection, that was made by the relation of cause and effect." Hume believed that "the mind had no creative function because to him, the association was a purely passive process. Therefore, the mind was merely the accumulation of the individual elements" (Hume, 1739, p. 4).

Hume's works fit into the continuing development of empiricism and associationism within the framework of the mechanistic spirit - the moderate empiricism. Hume believed that the law of association of ideas was the mental counterpart of the

law of gravity in the physical world; that is, a universal principle of the operation of the mind (Hume, 1739).

The formal founder of associationism was considered to be Hartley, based on his work Observations on Man, His Frame, His Duty, and His Expectations (Hartley, 1749). In his book, Hartley turned association of ideas into associationism, a view of mind and behavior that placed association at the heart of thinking and treated all psychological principles as principles of association. Hartley was considered important to associationism, not because of the originality of his work, but for the great clarity and precision of his organization and systematization of previous work. Hartley was the first to use the doctrine of association to explain all types of mental activity. He not only tried to explain the psychological process of mind in mechanical terms, but like other British associationists and empiricists, he also tried to explain the underlying physiological process within the same sort of framework. The most important work was his application of Newton's doctrine of vibrations to the mental process. Newton had said that impulses in the physical world are vibratory in nature; Hartley used this principle to explain the operation of the brain and nervous system. Vibrations in the nerves, which he considered solid, not hollow tubes as Descartes thought, transmitted impulses from one part of the body to another. The vibrations in the nerves "set up" or gave rise to smaller vibrations in the brain, which he considered to be the physiological counterparts of ideas. The importance of this

notion was not in the details of his explanation, but in his attempt to use the principles of the mechanical universe as a model for understanding the nature of man (Hartley, 1749). This idea was extended by another British philosopher, James Mill (1773-1836).

Mill applied the principle of mechanism to the human mind in a more direct and comprehensive manner than his predecessors. His purpose was to destroy the idea of subjective, psychical activities and to show that the mind of man was nothing but a mere machine (Mill, 1829). To Mill there was no such thing as freedom of the will. This idea persists in the forms of psychology that have derived from the mechanistic spirit, most notably contemporary behaviorism.

Something of a synthesis of nativism and empiricism was attempted by Immanuel Kant (1724-1804). Kant represented the viewpoint of the German nativist philosophers, but to some degree was influenced by the theory of British empiricist, Hume. Kant indicated that science is the highest form of human knowledge, and acknowledged that it begins with and systematizes experience. However, Kant held (Kant, 1896,) that human experience is necessarily shaped by innate characteristics of the human mind, which yield the orderly phenomena studied by science. Science therefore rests on a rational foundation that is inherent in the mind and therefore prior to experience. All the works written by the above authors were translated into Chinese and influenced the development of Chinese psychology and educational psychology.

The Chinese cognitivists at this point were represented by Wang Shouren. Wang's concept of human nature was similar to Mencius. He admitted: "our original nature is good. He wrote that what cannot be obscured is the manifestation of the highest good of nature, also called intuitive knowledge. When things come to it, right is right, wrong is wrong. This is the highest standard for the actions of man and of things, to which nothing can be added and from which nothing can be reduced. Any addition or reduction is selfishness and petty" (Feng, 1953, p. 146). As Wang perceived it, everybody, whether good or bad, fundamentally has the same mind. This can never be completely obscured by our selfishness, and always manifests itself in our immediate intuitive reaction to things. Everybody can become a sage if he follows intuitive knowledge and acts accordingly. What he needs to do, in other words, is to put his intuitive knowledge into practice.

Wang Fuzhi opposed the Chinese cognitivists' theory of predetermination. He said that no man has the ability to make nonexistent things exist. Everything can be understood. First, man has eyes to see, ears to hear, and heart (mind) to think. Through contact with the outside world and thinking with one's heart, one can know everything. When talking about the process of cognition and action, Wang supports the process of doing before knowing, or in other words, learning through acting. He stated that when one experiences the first time, he knows what to do the next (Fairbank, 1972). This theory is similar to Western behaviorism,

which had great influence on the Mao Tsetong's "trial and application" thinking in the twentieth century.

Chinese "Westernized" Confucianists of the seventeenth century translated books of Western philosophy and psychology and combined those imported thoughts with Confucianism. They turned themselves into practical Confucianists, one of the most important being Ren Yuan.

To Ren Yuan (Feng, 1953), principle, nature, destiny, and the sincerity of the will can be found only in practical arts like music, ceremony, agriculture, and military craft. He himself practiced medicine while he taught, and later he farmed with his students. He taught them mathematics, archery, weight-lifting, singing, dancing, and other skills. Ren believed that there was no principle apart from material forces. The investigation of things was to him not a study of principle, as to Chu Hsi, another neo-Confucianist, nor an examination of the mind, as to Wang Yangming, a contemporary philosopher of Ren, but learning from actual experience and solving problems.

Another neo-Confucianist, Kang Youwei (Creel, 1953) attempted to put Confucian teachings into practice in government and society as no other Confucianist had ever done. He changed the original concepts of Confucianism and some fundamentals of Confucian doctrines for the sake of reform. Differing from other philosophers in his time, Kang considered history not as a cycle, but as an evolution.



Tan Tsitong (Feng, 1953) tried to combine Confucianism, Buddhism, Christianity, and Western science and make a philosophy of universalism. Tan's ideas of humanity as universal love, as production and reproduction, as power of attraction were almost a repetition of Kang. However, he did refine them to some extent. He was the first one in China to regard humanity, not as a characteristic of reality, but as reality itself. Tan devoted a whole book to humanity and helped to bring the development of Confucius humanity to a higher level.

Scientific thought was developing rapidly in most Western countries during the post-Renaissance era, especially in Germany. However traditional empiricism, nativism and mechanism were being challenged by German experimental psychology and Gestalt psychology.

## Chapter Four

### The Emerging of Scientific Psychology and Educational Psychology (From Nineteenth Century to 1950s)

On the morning of October 22, 1850, in Germany, Gustav Theodor Fechner (1801-1887) had an insight that the law of the connection between the mind and body could be found in a statement of quantitative relation between mental sensation and material stimulus. Fechner pointed out that the amount of sensation or the mental quality depended on the amount of stimulation or the physical quality. Thus, to measure the change in sensation one must measure the change in stimulation, for the former depends on the latter. Therefore, it was possible to relate the mental world and the material world quantitatively. By relating one to the other, Fechner crossed the barrier between mind and body that confused people before him. As Edwin Boring commented in his A History of Experimental Psychology (Boring, 1950, in Hothersall, 1990, p. 116), "without Fechner there would have been little of the breath of science in the experimental body, for we hardly recognized a subject as scientific if measurement was not one of its tools. Fechner set experimental quantitative psychology off upon the course which it had followed" (Boring, 1950, p. 117). As a result of Fechner's pioneering efforts, a book entitled Elements of Psychophysics was

published in 1860. Following in Fechner's footsteps was the real founder of modern psychology, Wilhelm Wundt (1832-1920). Experimental psychology was later named by Wundt's disciple, Titchner, as structuralism. The aims of structuralism were to analyze conscious process into basic elements, to discover how these elements are connected, and to establish the laws of these connections. Wundt saw the task of psychology as the analysis of conscious experience into its basic elements, the same as the chemist analyzing a chemical compound into its constituent elements (Wundt, 1897). In other words, complex experiences are derived from elementary experiences.

Wundt's belief that cognition was an active, creative process aimed at providing structure to experiences came directly from Plato's nativist philosophy and Descartes' mechanistic philosophy. As for Plato and Descartes, Wundt held that attention (apperception) is an active state determined by subjective factors, such as innate mental structures, motivation, memories, and affect. External features, or environmental inputs were secondary. Similar to Plato and Descartes, Wundt's concern was with the nature of understanding; the assimilation of experience into the knowledge structures one already had (Wundt, 1897, p.83). In order to measure the experience of consciousness, Wundt invented the method of introspection, the examination of one's own thought and feeling, also called self observation.

Wundt's founding of the new experimental science of psychology marked the beginning of the first systematic school of

thought, structuralism. The task of the early structuralists was to discover the nature of elementary conscious experiences, analyzing consciousness into separate parts, hoping to discover the structure of consciousness. As the first experimental psychologist, Wundt founded the first laboratory of psychology, established the first journal of psychology, and began experimental psychology as an independent science. The orthodox Wundtian brand of the new psychology was transplanted to the United States by Wundt's most devoted pupil, Edward B. Titchener (1867-1927). Titchener differed on some perspectives with Wundt. He discarded Wundt's cultural anthropology, comparative psychology, and child psychology. However, he carried on Wundt's methods on introspection, observation, experiment and measurement in America.

The subject matter of structuralism for Titchener was conscious experience. Titchener defined consciousness as the sum total of a person's experiences as they exist at a given point in time. Mind of consciousness was defined as the sum of a person's experiences accumulating during his lifetime. Mind and consciousness were thus generally the same, except that consciousness involved mental process occurring at the moment rather than the total accumulation of process. Titchener once announced that psychology was not in the business of curing "sick minds" or reforming individuals or society. Its only legitimate concern was to discover the facts of the mind. Similar to his teacher's, Titchener set up three aims for structuralists: (1) to

reduce conscious processes to their simplest, most basic components; (2) to determine how these elements were combined and their laws of combination; and (3) to bring the elements into connection with their physiological conditions (Schutz, 1975, p. 83). The greatest contribution Titchner's structuralism made to psychology was to serve as a target for the newer schools like functionalism, Gestaltism, and behaviorism to aim. As Heidbreder pointed out: "Beyond question, the psychology of Titchener played a major role in the development of American psychology, not only as a distinct and lasting achievement, but also as a gallant and enlightening failure" (Heidbreder, 1933, p. 96).

Until the end of the nineteenth century, the influence of German structuralism was very strong in the United States. A large number of American psychologists brought back the Wundtian psychology after they graduated studied with Wundt. They taught their courses and developed their laboratories on the Wundtian model. Beneath the surface, however, a brand of psychology that resembled Galton's more than Wundt's was emerging - the school of functionalism.

Functionalism was the first pure American system of psychology. It was a deliberate movement protesting structuralism. Unlike structuralism, which attempted to discover the elements of consciousness, functionalism aimed at discovering the operations and functions of consciousness. Functionalism was not a protest against the structuralist experimental and

introspectional methods, but they did oppose the structuralist definition of psychology for its narrowness and restrictiveness.

Originating in America, functionalism was in contrast to the structuralism and Gestalt psychology imported from Germany. The functionalists founded the school during the late twentieth century. Functionalism stressed the study of the functions of the mind and the adaptive value of consciousness. The formal beginning of functionalism was marked by Dewey's The Reflex Arc Concept published in 1896, considered a classic in educational psychology and psychology.

In his revision of the reflex arc concept, Dewey viewed that "a response to a stimulus leads not merely to a decision that re-directs activity but also to a re-construction of the environment or the stimulating situation, which reconstruction makes a difference in future stimuli" (Dewey, 1896).

During his years as a student under George S. Morris, from 1882 to 1886, Dewey was a dynamic idealist, as was his mentor. Morris' version of philosophical psychology of mind was as follows: "The method in which the British Empiricists put all their trust, and which they style 'experimental' is ... abstract, partial, incomplete, and not commensurate with the whole nature and content of experience; The science of knowledge has nothing to do with unknowable objects. It has no ground on which to posit their existence. It has positive ground for absolutely denying their existence, for knowing that they do not exist." (Morris, 1883, p. 34). Morris conceived mind as constructive movement in

the context of natural activity conceived as the process of living, and had applied this philosophy to knowing, willing, and feeling by making the category of purpose basic for both organic and logical analysis.

Influenced by his professor, Dewey wrote his dissertation on The Psychology of Kant. This and his paper on Knowledge and the Relativity of Feeling were preoccupied with a criticism of British Empiricism and of Kant's contrast between feeling and knowing. Later, Dewey developed his theory on known objects as "objective consciousness" (Dewey, 1886).

In 1883, inspired by Darwin and the experimental psychology represented by G. Stanley Hall in America, Dewey decided to write a new psychology with more naturalistic biology, and to shift his conception of psychology as the philosophical point of view of "objective consciousness" to that of an experimental science. In July 1896, Dewey's new ideas of psychology were published under the title of The Reflex Arc Concept in Psychology. The idealistic tradition of self-realization through the mediation of desires by the will, which Dewey had inherited, was now transformed by the theory that the self is the organization of interests. Dewey reinterpreted that interests are not subjective feelings or desires, but patterns of overt activity that are objectively directed and socially interrelated (Dewey, 1896, p. 358).

Dewey utilized this theory in experimental schools and socialized school classrooms. He pointed out in his Human Nature and Conduct: "the book does not purport to be a treatment of

social psychology. But it seriously sets forth a belief that an understanding of habit and of different types of habit is the key to social psychology, while the operation of impulse and intelligence gives the key to individualized mental activity" (Dewey, 1922). Dewey's new ideas conflicted with the then theory of human nature, instincts, moral sentiments and values. He considered custom and habit as more significant environmental factors than instincts. He regarded experience as an operation which implies the cooperation of organism and environment. For this statement, Dewey was the pioneer in forming a behavioral approach of psychology. But this does not mean that he is a complete behaviorist. He never forgot his central idea of self-realization and self-responsibility which he inherited from idealists and the existentialists. He developed in many ways that the self is not to be conceived as a metaphysical agent but as an agency of responsibility. This might be the reason for Watson to declare that functionalism has both traces of nativism and empiricism (Hothersall, 1990, p. 368).

Dewey regarded life as learning and thinking, "Man thinks in order to live" (Dewey, 1896, p 357), which is similar to Descartes' "I think therefore I am" (Descartes, 1608). Like Descartes, Dewey considered thinking and learning as paramount importance in human's adjustment to life. Dewey as a psychologist as well as a philosopher was very strongly influenced by the theory of evolution and association. Dewey said in his paper that "behavior should not be treated as an artificial scientific



construct, but rather in terms of its significance to the organism in adapting to the environment" (Dewey, 1896, p. 359). He suggested in the same paper that "psychology should study the total organism functioning in its environment". The definition of educational psychology by Thorndike emphasized this notion.

Tracing the influence of the functional approach to educational psychology in America, Charles Darwin (1809-1882) and Sir Francis Galton (1822-1911) had also made significant contributions. For Darwin (Darwin, 1958), different structures and behaviors allowed animals to adapt to a particular environment. Through natural selection, the frequency of such structures and behaviors changed and the species evolved. Galton extended his cousin Darwin's concepts and approach to the study of human consciousness. The earliest followers of the theoretical approaches of Darwin and Galton were Cattell, James, and Dewey, the forerunners of pragmatism.

Dewey attacked the psychological molecularism, and reductionism of the reflex arc with its distinction between stimulus and response. He argued that the behavior involved in a reflex response can not be meaningfully reduced to its basic sensory-motor elements any more than consciousness can be meaningfully analyzed into its elementary components. He said that when this form of artificial analysis and reduction of behavior was undertaken, the behavior lost all meaning. All that was left were abstractions that existed in the minds of the psychologists performing the dissection. The proper subject

matter for psychology, as Dewey proposed, was the study of the total organism functioning in its environment. A function was a total coordination of an organism toward achieving an end-survival, as Dewey further explained (Schultz, 1975, p. 172).

Dewey was very strongly influenced by Darwin and his philosophy was based on the notion of social change. Dewey regarded a human's psychological process as the most important tool in the process of adjusting to environment. Based on his belief in evolution, Dewey developed his fundamental notion of pragmatism as that the power of scientific inquiry lay not so much in our discovering the truth of the way the objective universe worked, but in what it allowed us to do (Daum, 1994, p. 76). Dewey strongly believed that teaching should be oriented toward the student rather than the subject matter, which showed the trait of Socrates' conception of viewing the teacher's role as midwife.

One might describe the history of psychology and educational psychology from Wundt to the functionalists as the transition from the study of consciousness to the study of behavior. The belief of pragmatism led the functionalists to carry out studies of the behavior of children and animals, and apply mental tests to educational settings. The mental tests provided measures of behavior serving both to evaluate the effects of previous training and to predict future behavior. As one recalls, Wundt's psychology was based on the philosophical premise of a distinction between man's conscious experience and

his body. Descartes assumed that man was different from other animals because he has a mind. Darwin denied Descartes' notion of absolute difference between man and animals. Functionalism, as John Watson (1878-1958) stated, embraced both positions, and he sought to demonstrate that this was impossible (Kendler, 1963, p. 87).

At the time when Watson had his graduate training at the University of Chicago, the dominant school was functionalism. The focus of functionalism was on treating psychological process as functions, in the context of Charles Darwin's theory of evolution. Primarily interested in functions related to adaptive behavior, the functionalists mainly concerned themselves with all the activities of an organism. Although functionalism developed in part as a reaction to structuralism, both schools employed introspection as an experimental method of investigation. In addition to his functionalist type of training, Watson advocated more objective methods in his behaviorism, compared with the functionalist way of focusing on the total process of mental activities. Watson's molecular approach of behaviorism was later adopted by B. F. Skinner in his operant behaviorism.

Unsatisfied with Dewey's functionalism, J. B. Watson found another school, American behaviorism. For the purpose of confirming his assumption that one could study the relationship between behavior and organisms without any reference to consciousness as referred to structuralism, Watson established an animal laboratory at the University of Chicago using experimental

methods, but discarded Wundt's theories on consciousness and introspection. Watson, as a behaviorist, defined psychology as "a purely objective, experimental branch of natural science. Its theoretical goal was the prediction and control of behavior." (Watson, 1913).

The most important research method Watson used was the conditioned reflex method, which was influenced by both Thorndike and Pavlov. Watson described conditioning in terms of stimulus substitution. "A response", he said, "is conditioned when it becomes connected to a stimulus other than the one which originally aroused it" (Watson, 1913, p. 158). Watson developed a totally objective method from this concept that is, reducing behavior to its most elementary units, the stimulus-response (S-R) bonds. Thus, Watson carried on the very trait of the structuralism used by Wundt of studying man, in the same way physical scientists study the universe, by breaking it down into the component elements. Though Watson had gone so far in reducing behavior to the level of stimulus-response and left no space for cognition, in the long run, his conceptual behaviorism, the basic notion of behaviorism, has proved to be of greater importance for educational psychology than his methodological behaviorism. "Behaviorism ought to be a science that prepares men and women for understanding the principles of their own behavior. It ought to make men and women eager to rearrange their own lives, and especially eager to prepare themselves to bring up their own children in a healthy way; behaviorism deals with the behavior of

the whole organism in relation to its environment, and so on" (Watson, 1913, p. 159). Watson's concept of manipulating the subjects is in contrast with nativists' active role played by organisms.

Similar to America, Chinese debate on empiricist and nativist positions had never ceased. Nature versus nurture had been the most active topic since Western influence came to China.

One of the influential figures during this era was Zhang Tungsun (1875-1950). Zhang was a self-educated philosopher. From editor of newspapers and magazines, he rose to be a professor and dean of several universities. He had never been to the West but had translated Plato's Dialogues and Bergson's Matter and Memory and Creative Evolution, and other works, into Chinese. He had read translated books by James Mill, Herbert Spencer, Immanuel Kant, F. Wilhelm Nietzsche, Jean-Jacques Rousseau, and he also read books by John Dewey, William James, and Karl Marx translated by Hu Shi, a Chinese philosopher. Zhang had read more Western philosophy than any of his Chinese colleagues. Chiefly formulated between 1929 and 1947, Zhang's philosophy was derived from Kant, but he rejected Kant's bifurcation of reality into the manifold and unity and the division of the nature of knowledge into the given and the innate. To Zhang, knowledge was a synthetic product of sense data, form, and methodological assumption. He perceived that perception, conception, mind, and consciousness were constructs, which were products of society and culture, which is similar to Dewey's beliefs. Zhang described his philosophy as a

combination of Western logic and modern psychology and sociology, but that the system was his own. With such a background, no wonder Dewey's pragmatism was so successful in China. The theory of concepts as products of Chinese culture made it easy for the Chinese educators and psychologists to accept his philosophy.

The institutes of psychology began with the first independent department at Nanking Teacher's University in 1920, which offered educational psychology courses. The Department of Psychology was headed by two students who had studied in America, Lu Zhiwei and Chen Haoqian. Universities in other major cities soon followed Nanking Teacher's University's example and established their own departments of either psychology or educational psychology. The Psychological Society was founded in 1921 in Shanghai, soon after Dewey's visit in the years of 1919-1920.

Dewey influenced Chinese educational psychology through his lectures, his works and his students. Many famous Chinese educational and functional psychologists were trained either at the University of Chicago or Columbia University, where Dewey continued to develop his theories.

Since China had a history of following its leader's decision, the President of Beijing University, Cai Yuanpei, was fully responsible for any major changes in the university. Cai was not only a modern educational psychologist, but also a famous democrat and educator. When Cai studied in Leipzig, Germany, he learned psychology directly from Wundt. Cai actively practiced

Wundt's experimental psychology and Cai made the decision to establish the Department of Educational Psychology when he was the President of Peking University in 1926. Cai was the first Chinese administrator to advocate that experimental psychology be separated from philosophy. Cai built a psychology institute in China after he visited the Departments of Psychology at Harvard and Johns Hopkins.

Invited by Cai Yuanpei, President of Beijing University, and Hu Shi, a former student at Columbia University, Dewey visited China in 1919. This visit laid a solid foundation for functionalism in modern Chinese psychology. Accompanied by his former student Hu Shi, Dewey visited several major cities: Shanghai, Nanking, Tianjin and Peking. Dewey lectured in China on and off for two years. The main topic of Dewey's lectures dealt with the systematizing school of Aristotle; the nativist school of Descartes; the empirical school of Locke, and the functional school of William James and Dewey. Along with functionalism, Dewey also introduced the philosophy of pragmatism (Westbrook, 1991, p. 195). Pragmatism as a philosophy was founded in the early twentieth century by the contemporary philosophers Charles Sanders Pierce, William James, and John Dewey. The fundamental elements of pragmatism contain induction, the importance of human experience, naturalistic humanism, and the relations between science and culture. Dewey's ideology of functionalism and pragmatism were in tune with the trends in China at the time and complemented traditional Chinese psychology and philosophy. As

Dykhuizen points out in his book, The Life and Mind of John Dewey, Dewey gave his lectures at a time when the intellectual climate in Chinese philosophical circles was highly invigorating (Dykhuizen, 1973).

Both American and Chinese educational psychologies share the same influence from functionalism. At this point they are like "the two different lines of thought meet" from different roots "in quite different parts of human culture, in different times or different cultural environments or different religious traditions" (Heisenberg, 1958, p. 1).

Dewey, while the most influential figure in this period, was not alone in providing options and guidance. After Watson's declaration of behaviorism, Chinese psychologists were also affected. Due to the influence from Watson, the Chinese behaviorism held the same notion as Watson did. American behaviorism came into China via the graduate students who studied behaviorism in America and returned after graduation. One of the most eminent figures was Kuo Zingyang.

Kuo Zingyang (1898-1970) received his doctorate under the supervision of Watson at the University of Chicago. Influenced by Watson's behavioral theory, Kuo assumed an even more extreme behaviorist position than his professor. Kuo published a series on the concept of instinct in psychology. Kuo made very important contributions to psychology and embryology (Gottfried, in Hothersall, 1990, p. 386). Kuo indicated that many behaviors previously described as instincts were actually acquired habits



and that it was possible to have a "psychology without heredity". In his best-known experiments Kuo raised young rats, kittens and birds together. As adults these animals not only accepted each other but even showed each other some affection. The cats never killed the rats, and the birds raised with kittens would ride around the laboratory on the cats' backs. The so-called rat-and-bird-killing instincts of cats had not appeared. Such results helped Watson to prove his theory of "all behavior, including many actions formerly thought to be instinctive, was in fact learned." (Kuo, in Hothersall, 1990, p. 386). As one of the earliest behaviorists in China, Kuo published the following Chinese books on psychology, especially behaviorism: The Human Behavior (1923); The Basis of Behaviorism (1927); Textbook on Behaviorism (1928); Psychology A.B.C. (1928); Psychology and Heredity (1929); Behaviorism (1934); The Field of Behaviorism (1935); and Principles of Behavior (1935). Kuo was the first person to introduce behaviorism to China. Kuo was not the only person who became influential after graduating from American universities and returning to China, but he was the only "pure" behaviorist.

Another student, Chen Daqi (1886-1983), became a functionalist. Chen graduated from the University of Chicago with a Ph.D. in psychology. He studied under professors James R. Angell (1869-1949) and J. B. Watson. Chen learned functionalism from Angell and behaviorism from Watson. He then combined the two with his Chinese cognitive heritage and developed his theory into

a functional cognitive psychology. The Outlines of Psychology written by Chen in 1918, was the first textbook ever written by a Chinese psychologist. Chen described different schools of psychology and educational psychology in America, with an emphasis on experimentalism and functionalism. At the end of his book, Chen encouraged Chinese psychologists to try the three research methods used by their American colleagues: (1) introspection; (2) observation and (3) experiment. This book was authorized by the Chinese government as psychological textbook to be used nationwide. Later, Chen published Modern Psychology, which was based on his famous presentation in 1918. It contained: general psychology; experimental psychology; child psychology; and abnormal psychology. Chen also introduced the schools of developmentalism and cognitive in his book. Chen's lecture was warmly welcomed by the Chinese psychologists. Chen summarized the merits and defects of the schools in a very objective way. Like a candle, both Chen's books and lectures lighted the road of Chinese Psychology and educational psychology. Because of his contributions to the development of Chinese psychology and educational psychology, Chen was appointed the first Chairman of the Department of Psychology of Beijing University in 1926.

Wang Jingxi (1893-1968) graduated with a doctoral degree of psychology from Johns Hopkins University in 1923, and returned to China the following year. The psychological laboratory at Johns Hopkins University was built by G. Stanley Hall (1844-1924) after he returned from study with Wundt. At Johns Hopkins University,

Wang worked as an assistant for Adolph Meyer who was the director of the laboratory. Following his return to China, he taught psychology at Zhongshan University and Beijing University for nearly a decade and later became Director of the National Institute of Psychology of the Republic of China. In 1948, Wang was appointed as the Director of the Department of Science at the United Nations. From 1953 to 1968, Wang returned to the United States to teach psychology at both Johns Hopkins and the University of Wisconsin. Wang published several books and articles in Chinese which reflected his position in the field of educational psychology and the influence from his American professors. The books were: The Application of Behavioral Psychology, (1932); The Future of Chinese Psychology, (1933); To Mr. Pan Shu on His Predictions for the Future of Psychology, (1944); and Biological Analysis of Behavior (1944).

Ai Wei (1890-1955) received his Ph.D. from Washington University. Ai became a professor of psychology at several universities and later founded the Institute of Educational Psychology of the Republic of China, and also becoming the director of this institute. Ai devoted himself to the course of educational psychology in China and was known nationwide for his application of educational psychology to Chinese language study. Ai was the first educational psychologist to develop a Chinese version of the Intelligent Test for Primary and Middle School Students. Ai also published books on educational psychology and psychology: Advanced Statistics (1936); On Educational

Psychology, (1936); Experiments in Educational Psychology (1946); and Reading Psychology, (1948). Ai wrote the association between the shapes and the meanings of Chinese characters. He also wrote Educational Psychology for Chinese Language Teaching, (1954); and Educational Psychology of English Language Teaching, (1957).

Xiao Xiaorong (1897-1963) received his master's degree in psychology from Columbia University in 1927 and went to Germany to study Gestalt psychology for a year. He returned to America in 1928 and received his Ph.D. from the University of California in 1930. Xiao's dissertation was on Gestalt Psychology, and was highly praised by Edwin Boring, Chairman of the Psychology Department at Harvard University. Xiao published several papers in American psychological journals on Gestalt psychology. He was one of the earliest psychologists to contribute thoughts on Gestalt psychology in the field of American Psychology. Xiao was awarded a golden key from the American Psychological Society for his contributions to American Psychology. Xiao introduced Gestalt psychology to Chinese psychologists. The word "Gestalt" translated into Chinese as "Ge Shi Ta" was adopted by the Chinese people since his translation. Xiao published more than ten books on educational psychology and psychology as well. The title of these books are: The Principles of Gestalt Psychology, (1933); Experimental Child Psychology, (1933); Abnormal Psychology, (1934); Applied Child Psychology, (1935); and Educational Psychology (1940), and others.

Lu Zhiwei (1894-1970), graduated from University of Chicago with Ph.D. in psychology and dissertation on Ebbinghaus' Curve of Forgetting in 1920. In his dissertation, Lu made some important improvements of Ebbinghaus' graph. Lu was appointed as the first Chairman of the Psychology Department at Nanking Teacher's University in 1921, and transferring to Yan Jing University in 1926. From 1929 to 1936, Lu revised twice Binet's and Simon's measurement scales of intelligence. From 1936 until 1951, Lu was selected president of this university. He was elected by his colleagues as one of the leading members of Chinese Psychological Society when it was founded in 1921, and became president of this society in 1937. In 1926 Lu translated Thorndike's Outlines of Educational Psychology and officially introduced American educational psychology to the Chinese readers.

Unfortunately, the teaching and studying of educational psychology stagnated for more than a decade. This stagnation resulted from: the Anti-Japanese War from 1937 to 1945, and the Civil War between Guomindang and the Communist Party from 1945 to 1949. The teaching of educational psychology in Chinese colleges did not resume until 1950s.

## Chapter Five

### The Behavioral and Cognitive Approaches in Educational Psychology

(From 1950s to the Present)

The disputes between cognitivism and behaviorism in educational psychology are the continuation of nativism and empiricism in both contemporary America and China. Cognitivism in America is represented by Ulric Neisser, Herbert A. Simon, Allen Newell, and other contemporaries who were influenced by the cognitive developmental psychology by Jean Piaget(1896-1980) and Erick Erikson (1902-?). The influential behaviorists were Edward Tolman (1886-1959), a cognitive behaviorist, and Burrhus F. Skinner (1904-1992), an operant behaviorist. Chinese educational psychology after the 1950s and before the 1980s was influenced by Mao Tsetung (1886-1978) and Pan Shu (1897-1987) and was a mixture of Marxism, Maoism, and traditional Chinese philosophy.

There were two different approaches to the study of behavior: molar and molecular. Molar approach emphasizes cognition, while molecular focuses on simple or elementary organization. Tolman's emphasis was on molar or purposive behavior and cognition, while Skinner, took a molecular approach, searching for a unit of behavioral analysis similar to the reflex arc of the physiologists.

The difference between Tolman's behaviorism and Watson's is that Tolman took a molar approach rather than molecular. Teaching a comparative psychology course with Watson's textbook, Tolman experimented on rats' maze learning at Berkeley. He quickly realized that accounts of maze learning that stressed mechanical stamping in or out of connections between stimuli and responses did not adequately describe the behavior he was observing. To Tolman, there seemed to be more to the behavior of his rats than being prodded back and forth by stimuli, rewards, and punishments. Far from behaving in a mechanical, unthinking manner as Watson described, the rats were behaving with intelligence and purpose and learned a cognitive map of the maze. In 1932, Tolman published his Purposive Behavior in Animals and Men, which marked the beginning of his cognitive behavior.

To some extent, Tolman's theory of learning is different from Thorndike's. He rejected Thorndike's connectionism or law of effect, saying that reinforcement has little effect on learning. Instead, he proposed a cognitive theory of learning in which the continued performance of a task builds up sign Gestalts, which are learned relationships between cues in the environment and the organism's expectations. The animal learns through a cognitive map of the maze, not a set of motor habits (Tolman, 1932, in Hilgard, 1956, p. 186). Thus, unlike Watson, Tolman was not interested in the connections between stimulus and response, instead his focus was on the molar behavior - total response actions of the whole organism, using objective observation.

Tolman's concept of intervening variables as demand variables and cognitive variables have been accepted by a majority of psychologists. The demand variables include sex, hunger, security, motives; and cognitive variables include perception of objects, motor skills - abilities. To the author, Tolman's purposive or cognitive behaviorism has the potential of being developed into a psychology that both behaviorists and cognitivists could accept, as long as it combines both experimental and behavioral variables empirically.

Different from Tolman's molar approach but, similar to Watson's molecular conception, Skinner invented an "operant conditioning apparatus". The thought of conditioned behavior has connections with both Thorndike and Pavlov. The term operant conditioning was derived from the rat's or pigeon's operating on the tools set up for them, and reinforced with food by doing so. Skinner's apparatus were built based on the principle of Thorndike's the law of effect except that in Thorndike's experiments the response rate was controlled by both the subject and the experimenter, whereas, in Skinner's apparatus it was controlled solely by the subject (Skinner, 1990). Skinner's development of the operant conditioning apparatus and his use of the response rate led him to success in animal training and behavior modification.

The operant learning paradigm which Skinner invented was called the three-term contingency. The three terms (S-R-C) refer to the stimuli and/or circumstances which prevail when a response



occurs, the response itself, and the consequences of the response. The relationship among these three events depends upon whether a reinforcer or punisher is involved. One of Skinner's main contributions to contemporary behaviorism was the method of behavior shaping, which can be found in his work How to Teach Animals. (Skinner, 1951). The techniques of immediate reinforcement, shaping and schedule control are now pervasive in training animals in commercial settings and for entertainment. Another significant contribution Skinner made was the use of a teaching machine. Though Pressey first invented a device that depended on trial and error, Skinner's teaching machine was used to eliminate errors and provide the learner with a series of small successes, which made the teaching process more efficient. Skinner's teaching machine was also based on the operant principles of behavioral control established in his animal research. With teaching machines and programmed instruction the students' responses can be reinforced immediately and rectify incorrect answers can be rectified accordingly.

By the early 1960s, teaching machines became very popular in America, but declined with the emerging of humanistic psychology. Humanistic psychology was, as described by Maslow (Maslow, 1969, p. 9), one of the major figures of the humanistic movement, "a larger superordinate structure" that could accommodate behaviorism and other positions in psychology. The members of this new force criticized behaviorism as a narrow, artificial, and relatively sterile approach to the understanding

of man. They argued that man can not be dehumanized to a "large white rat" or be reduced to an "empty organism." (Schultz, 1975, p. 182). As one of the leading proponents of this group, Abraham Maslow (1908-1970), put it: that we are offered beautifully executed, precise, elegant experiments which, in at least half the cases, have nothing to do with enduring human problems (Maslow, 1965).

Including Neisser, this group of cognitivists called themselves "humanistic psychologists" and represented a new trend of educational psychology. They were highly critical of continued reliance of behavioral approach to the study of man with its mechanistic, reductionistic, elementalistic, and simplistic tendencies (Neisser, 1967, p. 23). This trend of thought was apparently influenced by a noted Swiss cognitive developmental psychologist Jean Piaget.

Beginning in about 1960, Piaget's theory of the development of intellectual competence from infancy through adulthood won the world's attention. His field was genetic epistemology, the examination of the formation of knowledge itself; that is, the cognitive relations between subject and objects. To Piaget, the two most important concepts of genetic epistemology are functional invariants and structure. According to Piaget, the functional invariant are inborn, universal, and independent of age; accommodation, assimilation, and organization. Structures are defined as intellectual processes that change with age. The structures are identified in the developmental stages of the

period of sensorimotor intelligence, the period of preoperational thought, the period of concrete operations, and the period of formal operations (Piaget, 1953, p. 19).

Piaget found a quite different approach to the study of intelligence, clinical and qualitative. In his major work on this subject, Piaget (Piaget, 1953, p. 20) viewed intelligence as a biological process of adjustment between the conscious organism and its physical and social environment. According to Piaget, the complexity of the cognitive structures increases and changes qualitatively through different stages of the child's mental growth. Briefly, Piaget viewed the mental development of the child as going through four main stages: (a) The sensorimotor stage (from birth to 12 months) is the first phase of intellectual development, which includes conditioning, stimulus-response learning, reward learning, perceptual recognition, and associative learning and memory. (b) The preoperational stage (1 to 2 years) is a transitional period between the sensorimotor stage and preoperational stage. The characteristic of this stage is symbolic play and cognitive egocentrism. The child in this stage views objects and relationships only in terms of his own relation to them. (c) Concrete Operations (6 to 7 years) is the first stage of operational thinking. At this stage children develop the ability of conceiving the invariant structure of classes, relations, and numbers. (d) Formal operations (11-13 years) is the final level of operational thinking. It is characterized as logical reasoning, propositional thinking,

combinatorial and inferential thinking that involve using hypothetical possibilities, abstractions, and imaginary conditions.

Another developmental cognitivist who had direct influence on American cognitive psychology and was influenced by Piaget was Erik Erikson. Born in Frankfurt, Germany, Erikson was influenced by Anna Freud. After completing training at the Vienna Psychoanalytic Society in 1933, he left for Boston, and became that city's first child psychoanalyst. During the 1960s he served as professor of human relations at Harvard University until his retirement in 1970. Erikson's most well-known work was his Identity: Youth and Crisis (Erikson, 1968, p. 45). In his book, Erikson described the human life cycle as comprised of eight stages: (1) the oral-sensory stage; (2) the muscular-anal stage; (3) the locomotor-genital stage; (4) the latency period; (5) puberty or adolescence; (6) young adulthood; (7) adulthood; and (8) maturity and old age.

Erikson's stages are assumed to be interdependent and build upon one another in a cumulative manner. Each stage contributes a unique trait to the evolving personality.

Influenced by Piaget's cognitive developmental theory, and parallels with Erikson, American cognitivist, Ulric Neisser completed the first book on cognitive behavior in America. Neisser's Cognitive Psychology (Neisser, 1967, p. 32) emphasized that "cognition refers to all the processes by which the sensory input is transformed, reduced, stored, recovered, and used" and

that "it is apparent that cognition is involved in everything a human being might possibly do; that every psychological phenomena is a cognitive phenomena.

Educational psychology in America during the late twentieth century has shifted its emphasis from behavioral to cognitive. An article of The Annual Review of Psychology of 1977 announced: "The current shift emphasizes the study of central cognitive and affective associationistic and holistic processes by which the learner selects, transforms, and encodes the nominal characteristic of experience into functional, meaningful representations. A cognitive perspective implies that a behavioral analysis of instruction is often inadequate to explain the effects of instruction on learning" (Wittrock & Lumadaine, 1977). By the year of 1981, the same annual review of psychology stated that instructional psychology is no longer basic psychology applied to education. It is fundamental research on the processes of instruction and learning. Instructional psychology, like most research on human learning and development, is now largely cognitive; it is concerned with internal mental processes and how their development can be enhanced through instruction. With the renaissance of the cognitive school after Skinner, there arose two new stars: Simon and Newell. The primary reason that cognition came back into psychological science was the invention of the modern digital computer. With computers, humans can spread out on the table all sorts of ideas about the

stream of mental process that is activated by a stimulus that generates the response.

During the early 1960s, Simon and Newell thought that since computers are devices for manipulating symbols, and since human minds are also devices for manipulating symbols, theories of how minds work can be represented as computer programs. Based on these assumptions, Newell and Simon developed two famous programs: "The Logic Theorems", which represents mental processes of proving theorems in symbolic logic; and "The General Problem Solver", which represents mental processes of solving problems (Simon, 1969, p. 37). These two programs are both related to the mental process invented by James. When humans try to solve problems with a computer, they require programming languages that are appropriate for the simulation of human thinking. To solve this problem, Newell and Simon invented the programming language which is called "a production system". This language reflects the fundamentals of human cognition: goals, rules, expected outcomes and knowledge. The language of programming emerged as a powerful new way of depicting the psychology of the mind.

When American behaviorists and cognitivists were entering the information-processing stage, Chinese psychologists, influenced by Soviet psychologists, were trying to find answers about consciousness and behavior from the works of Marx and Mao.

Though Mao rejected Dewey's philosophy, he willingly accepted Marx. Ironically the communist Marx, and democratic Dewey shared the same philosophical tradition that influenced

China. Like Dewey, Marx was an enthusiastic follower of Hegel when he was young. Although he later broke from it, Hegelianism made a lasting impression on Marx (Ozmon & Craver, 1995, p. 324). Marx rejected Hegel's idealism but kept the concept of alienation and a dialectical apparatus but changed it from an idealistic to a materialistic philosophical base. Instead of humans being alienated from Spirit objectifying itself, Marx maintained that humans become alienated from their own creations, such as society and the means of production. Rather than a dialectic occurring between ideas, Marx adopted the notion of a dialectic between economic conditions and human action, or what has been called "the materialist conception of history". The most influential part of Hegel was, for Dewey, the Hegel who studied historical development and who sought an emerging unity from contending historical forces - not the Hegel who arrived at Absolute Spirit. Dewey once remarked that "acquaintance with Hegel has left a permanent deposit in my thinking" (Ozmon & Craver, 1995, p. 330). Many of Hegel's conceptions were derived from Plato.

After the founding of the People's Republic of China, the major external influence on the development of Chinese psychology and educational psychology was from Marx and the Soviet Union. One distinguished characteristic of Marxism and Maoism is the importance of materialistic ideas. Marx drew from materialism a number of important ingredients, alienation being one of them. His ideas on the concept of the nature of man and the concept of knowledge are also based on this theory. Mao, as the country's

policy maker, followed Marx closely on the major issues. The only differences they have are on ideas of secondary importance.

There were two principal characteristics of the new Marxist psychology adopted by Mao: materialism and Monism. Monism referred to the attempt to reduce all behavioral and mental phenomena to one basic system of material causality. Mao, as a Marxist follower rooted in Confucianist and Taoist thought, believed that "in the general development of history the material determines the mental and social being determines consciousness, we also - and indeed must - recognize the reaction of the mental to material things, of social consciousness of social being and of the superstructure on the economic base" (Mao, 1937, p. 68). This statement is apparently a mixture of Chinese traditional thought and Marxist materialism while he asserted "it is man's social being that determines his thinking".

With relevance for contemporary psychology, Skinner would have no quarrel with Marx on the issue of human's relation with nature. Skinner (Skinner, 1972, p. 121) indicated that "Human behavior is contingent on environmental conditions, and that the human environment largely of humanity's own making". Marx advocated (Marx, 1971, p. 97): "man's nature is decided by man's relations with nature, society, and other person. These relations are dialectical in the sense that they are determined by, but also determine how and what men produce". According to Marx, "labor and class struggle are consequently determined by social



relations. But they in turn determine these relations and form and change human nature".

Though Mao would agree with Skinner on conditioned human behavior, he would argue with Skinner on his notion of controlling human behavior to a desirable end through systematic manipulation of external environment. Like Skinner's Walden Two (Skinner, 1972, p. 245), Mao also dreamed of creating a new culture, but his design was in contrast with Skinner's community. In Skinner's community, the environment was created by the politician-scientist; Mao designed a cultural revolution, hoping this could be done by the common people. He declared in his writing (1945): "people, and only the people, are the motive force in the making of the world history". Mao's conception of viewing people as taking an active role in relation to their environments and in determining their own behavior was cognitive oriented, but his idea of designing a Utopian cultural setting is similar to the idea of operant behaviorist, Skinner.

Marx wanted to overcome human alienation, which he felt was the direct result of private property and the control of production by an elite. Marx (Marx, 1975, p. 49) felt that it was his responsibility to develop proper theoretical bases so that the working class would be aware of general directions to be taken. The method Marx used for fulfilling this task was education. Marx stated that it is people who change circumstances and that "educators must themselves be educated"; that is, before

one can purposefully educate others, that person must first be educated through some purposeful human activity.

Compared to Marx's idea of educating the workers in order to eliminate the alienation, Mao applied this theory to the education of Chinese peasants. The most important facts for his doing so were, first, Mao himself was an intellectual of peasant's background; second, in China the peasants constituted about 85% of the population and Mao worked with them during long revolutionary years. Similar to Marx, Mao indicated that one should learn knowledge from masses, lay down policies, and after that go back to educate the masses. Therefore, in order to be a teacher, one should first be a pupil. Mao's strong emphasis on sending educated youth to the countryside was part of his plan for the solution of contradictions between the urban and the rural areas, and between the peasants and intellectuals. Young intellectuals, he felt, could introduce knowledge and attitudes needed for the transformation of the old villages, while the young people themselves could be ideologically remolded at the same time by the peasants and realize the importance of manual work in the transformation process. This was Mao's method of solving the contradiction between intellectuals and peasants and also the way of eliminating the alienation--the alienation between the intellectuals and the peasants.

The essence of educational psychology is always connected to aquisition of knowledge. During the process of the development of Chinese educational psychology, the philosophy of Marx and Mao

became the solid foundation in China. Marx considered human action to be the prerequisite for the acquisition of knowledge; by acting upon and transforming nature and constructing human society, Man acquired new knowledge which made possible further transformation, which in turn led to more knowledge in a constant dialectical spiral.

In addition to Mao's utilization of the Marxist outlook, Mao also considered knowledge to be susceptible to a dialectical process. Writing on this dialectical and materialist nature of knowledge, Mao stated that practice, knowledge, again practice, and again knowledge, repeats itself in endless cycles, and with each cycle the content of practice and knowledge rises to a higher level. Such is the whole of the dialectical-materialist theory of knowledge, and such is the dialectical-materialist theory of the unity of knowing and doing.

It is intriguing that the very essence of educational psychology created by Thorndike as connectionism, or trial and error, is so similar to Marx's dialectical spiral and Mao's theory of trial and practice.

During the time when China struggled to reach the goal of becoming independent from Western influence in the 1950s, educational psychology was upholding the principle of Marxist dialectical materialism. Through this period, the Chinese educational psychologists and psychologists turned away from Western psychology and considered Soviet psychology their model; especially Pavlov's classical conditioning paradigm.

The movement of criticizing the bourgeois orientation in the psychological field started around 1958. Initiated in Beijing, it spread all over the country, with the criticism focusing on "biologization" meaning over-emphasis on the biological sources of psychological process, and "abstractionism". The method of "transferring the results of dog experiments to humans" and the theory of a biological foundation of behavior were severely criticized as putting second things first, therefore contrary to Marxism and Leninism. Psychologists were forced to apply Marxist theory to the areas of labor psychology, medical psychology and educational psychology. Chinese psychologists debated the following topics: Was Pavlovian theory necessary? Should psychology study only the awakened, cultured working class and pay no attention to the exploiting class? Psychology was a social science study of both exploiting and exploited classes. The psychology being severely attacked was the "bourgeois" Western approach based on behaviorism, Gestaltism, and psychoanalysis. A textbook of Educational Psychology was published on the teaching of psychology for teacher training schools, written by the Shanghai branch of the Psychological Society (Wang, 1993). It was an integration of the conventional method of viewing psychological process and new elements deriving from two sources: the communist theory of reflection and consciousness, and Pavlov's conditioned reflex and second signal system. This movement lasted three years and was

interrupted by the changing of the political climate between China and the Soviet Union.

Influenced by the political conflict between the China and the Soviet Union, during late 1950s and early 1960s, Chinese educational psychology entered a stage that can be characterized as more independence. Educational psychology became the primary focus of psychology in the 1960s as China recovered from the excessive enthusiasm of the Great Leap Forward (a movement of rapid expansion of the goals of industrialization and modernization). During this period, some experimental research and elementary studies on educational psychology were conducted concerning the basic ideas of conceptual development and physiological psychology. Questions of practical relevance in education and industry were also discussed. The initial thrust of research in the field of educational psychology was on curriculum subjects and character training. The latter became a national concern and soon eclipsed curriculum studies as the most important area of research. The Second Congress of the Chinese Psychological Society was held in 1960 and the Journal of Teaching of Psychology published its first issue. With a publication of one hundred papers that year, Chinese psychologists were struggling for an independent theory of educational psychology in China. In 1962, the Chinese Psychological Society called a conference on Educational Psychology Specialty in Beijing. There were two hundred representatives from sixteen local branches attending. One of the

most important jobs done at this conference was to establish an Educational Psychology Special Committee. The President of the Chinese Psychological Society, Pan Shu, addressed the psychologists concerning proposed research topics in 1963. Pan brought up six psychological problems requiring investigation: (1) Moral education and training of workers with socialist consciousness and culture; (2) Education for physical labor; (3) Classroom instruction; (4) Determining school age; (5) Special education; and (6) Psychological development of children and pedagogical reform in elementary school (Pan, 1963, p. 6).

During this period three books related to psychology and educational psychology were published based on the principles of Western standards: Child Psychology (Zhu, 1962); General Psychology (Cao, 1963) and Educational Psychology (Pan, 1964). More articles on educational psychology began to emerge in university journals. These books and articles reflected a significant progress made by the Chinese psychologists and also the degree of Western influence.

In a psychological conference in 1962, Chen Li, Professor of Psychology and President of Hangzhou University, lectured on the tendencies abroad, and focused on Skinner's teaching machine. Significant in his comments during his presentation was the lack of negative criticism of the progress made by American Psychologists as compared to earlier references to Western psychological research.

During the history of Chinese cognitivism, the major concern by the cognitivists has been the topic of consciousness, which was discarded by behaviorism. Chinese cognitivists developed the term "consciousness" into various concepts: consciousness, subject consciousness, active consciousness, and social consciousness. One cognitive psychologist wrote a paper to compare the moving power of active consciousness with man's positive nature, creative nature, voluntary nature, spiritual nature, purposive nature, and predictive nature. The Chinese cognitivists considered consciousness a product produced by human society representing a socially conditioned reflection of reality. The learning process can not be studied in the abstract but only in the context of concrete activities.

Regarding the process of learning and development, Chinese psychologists during this time held the position that knowledge was derived through experience, society, class origin, family background, and school. In one word, knowledge comes from experience and environment. They believed that psychology was the study of reflection of the objective world on the brain. The brain could store reflections, could use language to utilize other people's knowledge, and add its own understanding.

When discussing child's brain development, the mainstream of both cognitivists and behaviorists believed in the same theory: conditioned reflexes built up sensations and perceptions. Since children's perceptual ability is limited, teachers were encouraged

to use demonstrations and self-control methods (Chin, 1969, p. 56).

Affected by the political climate at this time, the Chinese Psychologists and Educational Psychologists began to attack both American cognitivism and behaviorism as "capitalist products." Dewey's functionalism, once the essence of Chinese Psychology, was criticized as an idealist psychology from a capitalist country (Ni, 1957, p. 194). The founder of Chinese behaviorism, Kuo was blamed as "one of the most reactionary propagandist of behaviorism", and "the big mistake the behaviorists made was neglecting of the importance of the functions of the higher nervous system." (Ni, 1957, p. 198). In order to make greater profits, behaviorism attempted to make the working people like a machine or a man without consciousness, according to Ni. The Gestalt psychology was categorized as "subjective idealist because it studies insight" (Ni, 1957, p. 199).

Due to political ideology, both Chinese behaviorists and cognitivists tried to apply Marxism to their theory. Some psychologists favored the study of psychological processes with emphasis on functions of the brain, higher nervous system, and reflection theory. Others were studying the formation of characteristics of individuality. For example, Liu Fan wrote in the Psychological Journal in 1961 that, Man's will, feeling, and the development of his entire individuality is due to the function of the reflection of objective reality and active consciousness. As to man's individuality, it is the complete reflection of the



entire history of the change in his objective reality and the realization of his active consciousness. As man continually remakes his subjective world and shapes his consciousness, he develops his individuality (Yang, 1961, p. 6).

Yang Chengchang (Chin, 1969, p. 47) held a different approach than Liu. He believed that individuality is derived from self-consciousness and goal orientation. He stated that when man develops a habitual attitude toward his reflection of objective reality, this becomes individual character. The development of individuality depends upon experiences or reflection. He further indicated that individuality is not self-moving but it is moved by reflection activities.

Another trend at this stage was individual differences in the learning process and character development, which reflected a more cognitivist approach. In a psychological conference in 1963, Cai Ji called attention to individual differences. He explained that in primary and secondary schools, some students with high learning ability lack discipline, making the atmosphere difficult for the slower students. He suggested the selection of group of children with high learning ability for testing. But questions were raised by the psychologists: how shall these differences be understood, what should be done about them, and how does one fit these differences into the needs of a socialist society? Before this line of inquiry into individual differences could be fully developed, another political wind changed its course in 1965. Equalitarianism of the most fundamental sort

became the reigning value. The intention of testing individual differences was superseded by the evaluation of the differences of political attitudes.

From 1966 to 1976 China began her "Great Proletarian Cultural Revolution" movement. The Chairman of the Chinese Communist Party, Mao Tsetung, was not satisfied by the inefficiency of the Chinese educational system and was looking for a new approach. During the entire decade, institutes of psychology and educational psychology were considered bourgeois pseudoscience and were shut down; books were burned, and laboratories were disbanded. Psychologists and educational psychologists were sent to the countryside along with other intellectuals and scientists.

In 1964, Mao Tsetung noticed that the existing educational theory was separated from practice at all levels of educational facilities. Mao Tsetung decided to initiate a movement on educational reform. This revision was reflected within social and educational changes brought about by the Great Proletarian Cultural Revolution which was openly started in Beijing in 1966. As did other selectionists, Mao strongly believed Darwin's theory of evolution. He accepted Darwin's descriptions of finite limited resources and an increasingly competitive struggle of government as differentiating the human species from others. Schools were part of society's culture, and Mao believed that education was a crucial means of ensuring the struggle for survival. This struggle was not for personal gain, but for the benefit of all

proletarian and working-class people and their respective social and productive systems. Mao aimed to establish a new educational system with an emphasis on learning through an active educational program in which the educational system directly interacted with all social and productive systems. Mao's concept of the relationship between the teacher and the learner demanded mutual equality and respect. They were expected to learn from each other. Mao did not feel that educational experts were necessary, and believed that the highly specialized individuals were most likely to become bourgeois representatives. The main task for the Great Proletarian movement was to remove the "bourgeois specialists" from their positions and return the positions to the working-class people. Since most of the psychologists and educational psychologists were considered experts in their fields, they were driven to the factories and the countryside along with other scientists, to receive education from the working people. As a pseudoscience, psychology and educational psychology were severely criticized and then dismissed. Psychology and educational psychology begin to recover until the death of Mao in 1976.

Starting from 1977 and continuing to the present, Chinese educational psychology gradually came to the stage of maturation. Cognitive approach of learning became mainstream in the field of educational psychology with the number of publications on cognitive study dramatically increasing. As mentioned above, the development of Chinese psychology and educational psychology was

greatly influenced by foreign countries. The following discussion will analyze the influential factors at various stages.

In 1977, soon after the termination of the Cultural Revolution, the Chinese Psychological Society (CPS) was reestablished. In 1978, CPS became a member of the International Union of Psychological Science and is presently responsible for exchange programs with the outside world. Well-known psychologists from America and other Western countries are invited to lecture in China, and Chinese psychologists are also sponsored by their colleagues abroad to collaborate on research, or visit. Through this communication, information from the outside world is dramatically increasing.

At this time, Chinese psychologists, both behavioral and cognitivist shifted their focus from politics to academics. The behaviorists adapted some testing methods from cognitivists, and applied them in the clinical setting. The cognitivists combined the cognitive testing and behavioral measurement skills adapted from the West. Examples included: intelligence and ability tests, including Wechsler Adult and Children Intelligence Scales (WASC-CRS); Chinese Binet-Simon Test; Raven's Standard Progressive Matrices; and some Chinese tests such as Clinical Memory Test, Children's Cognitive Ability Scale and Creativity Test. Personality tests included the California Personality Inventory with a sample of 9050 students. The test contains variables of aspiration, independence, self-confidence, persistence, motivation to learn, and self-consciousness. When psychology restored its

momentum in China in 1978, the main interests of research were cognitive strategies, levels of processing, knowledge acquisition and representation (Wang, 1993, p. 115).

The president of the Chinese Psychological Association, Pan Shu, was the most important figure at this time. Pan received a Ph.D. in psychology from the University of Chicago in 1926. Pan became a professor of Central China University, chaired the Department of Psychology in Nanjing University and later became the president. Pan served as the first President of the Chinese Psychological Society, from 1955 to 1984. Pan published some well-known books on both Psychology and Educational Psychology. He published Outlines of Psychology in 1934; Educational Psychology (1959/1964/1982); Applications of Psychology (1984); and Some Notes on Psychology (1984). The most popular textbook was the revision of Educational Psychology, published in 1981, and which has been used by most education departments in Chinese universities since the publication. The textbook is mainly a combination of Marxist dialecticism, Pavlovian behaviorism and Piaget-type experiments on children's thinking, studies of perceptual development, and experiments involving classical conditioning. The methods for educational psychology are: observation, investigation, summary of experience, natural setting experiment and laboratory experiment.

Under the leadership of Pan Shu, during the past decade three active areas in educational psychology stood out; (1) the psychology of instruction design, focusing on cognitive skills

and instruction in Chinese language and math word problems; (2) the psychology of adolescent moral development, and in the motivation of learning; (3) the psychology of teams and school management, relating to team behavior, program evaluation, and performance appraisal. Recently an effort had been made to extend educational psychology to the family and community context. A new trend in training of Chinese psychologists was the program of school psychology as a profession in terms of psychological testing, counseling, and pre-vocational guidance (Wang, 1993, p. 90).

From the late 1980s and early 1990s, experimental psychology became dominant. While studies on perception were still active, emphasis on experimental psychology had recently shifted to the areas of, cognitive strategies, levels of processing, and knowledge acquisition and representation. (Wang, 1993, p. 91).

Recent findings in America in the field of educational psychology are very encouraging. Individuals routinely call to mind memories of events they have experienced, but recent research has just discovered how the brain makes this possible. A brand new study published by the Science News on October 1, 1996 shows that separate brain systems store and recall incidents in one's life; moreover, each of these systems relies on its own helper areas that specialize in what happened, where it occurred, or when it took place. The evidence shows that the left side of the prefrontal cortex always participates in the acquisition of

novel information, whereas the right prefrontal cortex consistently aids in remembering that material later on. Each prefrontal area belongs to a general memory network that receives dispatches from hard-bitten neural correspondents interested only in the contents, location, or time of various events. Twelve subjects from age 19 to 40 participated in this experiment. The subjects were asked to read two series of words presented individually on a computer screen. Words randomly appeared on either left or right side of the computer screen. Increased blood flow, signifying greater brain activity, appeared in the left prefrontal cortex during the learning trials and in the right prefrontal cortex during the memory trials. This is an important breakthrough for locating brain areas involving in specific aspects of historical event memories.

A further study with rabbits by a neurophysiologist, Walter J. Freeman of the University of California, Berkeley, shows that mammalian brains contain a mechanism that can loosen the grip of previously acquired perspectives on the world and lay the neural groundwork for securing crucial new knowledge (Science News, 1996, p. 281). Like cognitive behaviorist Tolman, Freeman regards the mind as the product of an unfolding sequence of goal-directed behaviors that provides the individual with constant feedback, thus shaping perceptions and future actions. Like Dewey, Freeman stresses the important function of human brains to interact with each other in order to adjust to society. Unlike behaviorists, who consider mind as a by-product of biological happenings in the

brain, the interplay of billions of neurons or a cerebral stew of chemical and hormonal interactions or the commingling of quantum forces as the physicists proposed. Freeman's perspective also clashes with the cognitive view that the mind contains representations of the world in the form of thoughts, ideas, images, and symbols that are processed according to sets of rules. Whether Freeman's new approach will light up the psychological world or distract the already existing trends remains unpredictable.



## Chapter Six

### Conclusion

This study has examined the development of educational psychology, from ancient philosophy to philosophical psychology; from scientific philosophy to modern psychology; from empiricism to nativism; and from behaviorism to cognitivism, in both China and America. Despite the differences, Chinese educational psychology and American educational psychology have much in common.

After his lecture tours to China and India, Niels Bohr wrote in 1958: "For a parallel to the lesson of atomic theory, we must turn to those kinds of epistemological problems with which already thinkers like the Buddha and Lao Tzu have been confronted, when trying to harmonize our position as spectators and actors in the great drama of existence" (Bohr, 1958).

A similar comment has been made by Fritjof Capra in his The Tao and Physics in 1977: "If physics leads us today to a world view which is essentially mystical, it returns, in a way, to its beginning, 2500 years ago. It is interesting to follow the evolution of Western science along its spiral path, starting from the mystical philosophies of the early Greek, rising and unfolding in an impressive development of intellectual thought that increasingly turned away from its mystical origins to develop a world view which is in sharp contrast to that of the

Far East. In its most stages, Western science is finally overcoming this view and coming back to those of the early Greek and the Eastern philosophies. This time however, it is not only based on intuition, but also on experiments of great precision and sophistication, and on a rigorous and consistent mathematical formalism" (Capra, 1977, p. 5).

Comparing Taoists with the Western psychologists, the attitude of the Taoists was essentially scientific and experimental. Only the deep mistrust of the Taoists in the analytic method prevented them from constructing proper scientific theories. Nevertheless, the careful observation of nature, combined with a strong mystical intuition, led the Taoist to profound insights of science which are confirmed by the modern scientists.

Take the ancient Chinese Hexagrams and the modern S-matrix for example: the Chinese Hexagram in I Ching or Book of Changes is from sixth century B.C. and the S-matrix form was created by Heisenberg in 1943 A.D. The starting point of I Ching was a collection of sixty four figures representing yin and yang. Similarities exist between the two regardless of their time difference. The basic principle of the pattern of the hexagram is the interplay of the polar opposites "yin" and "yang". The yang is designed like a solid line (\_\_\_\_\_), the yin with a broken line ( - - ). Each hexagram consists of six lines which may be either broken (Yin) or unbroken (Yang), the sixty-four of them constituting all possible combinations of that kind. The whole

system is built up naturally from the two lines and represents the dynamic interplay of the yin and yang, and is reflected in all cosmic and human situations. These situations are not seen as static, but rather as stages in a continuous flow of change. They are in a state of continual transition of changing one into another.

The S-matrix is a collection of probabilities for all possible reactions involving hadrons. This form was originated from the fact that one can imagine the whole assemblage of possible hadron reactions arranged in an infinite array of the kind mathematicians call a "matrix". The letter "S" stands for scattering matrix which refers to collision, or scattering processes of particle reactions.

Both Hexagram and S-Matrix theory emphasize the processes of change and transformation. In Hexagram, the basic processes of changes are seen as essential for an understanding of all natural phenomena. In S-matrix theory, these processes are the particle reactions that give rise to all the phenomena in the world of hadrons.

The point is that some people insist that the ancient Chinese hexagram can not be considered as science, and is not applicable to Western modern mathematics. Or it might apply to Capra's statement: "this can be an example of the Western science turning back to the early Greek and Eastern philosophies with its accurate experiments and consistent mathematical formulism" (Capra, 1977, p. 6).

The second comparison is between the Taoists' theory of "Yin" and "Yang" and James' metaphor of "tender- and tough-minded". The purpose of this comparison is to verify whether Chinese philosophy is applicable to American philosophical psychology.

Yin and Yang are the symbols that permeate Chinese culture and determine all patterns of the traditional Chinese way of life. "Life is the blended harmony of the Yin and Yang" (Chuang, 1971, p. 34) or life is a balance of opposites in the eyes of common Chinese people. Yang represents heaven, male, bright, above, firm, tough, creative; and Yin symbolizes earth, female, dark, below, yielding, tender, and receptive. The two dots in the diagram "Tai chi Tu" symbolize the idea that each time one of the two forces rotates to its extreme, it contains in itself already the seed of its opposite. Controversy is not Chinese tradition, the comment quoted from Ho that Asian psychology was concerned with man's harmony with his fellow men, society, nature, and the cosmos is correct. But, the fact is, they do not stop only at the confronting stage. They went on to study various combinations of Yin and Yang, and concluded in the book I Ching which might be of benefit to Western culture as well.

It might be coincidental, that two thousand years after the Chinese invented the Yin and Yang theory, that William James divided psychologists into "tough-minded" and "tender-minded".

In his book Pragmatism (James, 1908, in Sahakian, 1986, p. 178), James admitted that there were two kinds of psychologists:

"tender-minded" and "tough-minded" The term "tender-minded" is similar to Yin and the "tough-minded" is similar to Yang. The definition of the tender-minded by James are: "rationalistic (going by principles), intellectualistic, idealistic, optimistic, religious, free-willist, monistic, dogmatical. The tough-minded: empiricist (going by facts), sensationalistic, materialistic, pessimistic, irreligious, fatalistic, pluralistic, skeptical. Each type believes the other to be inferior to itself." James concluded: "Few of us are tender-foot Bostonians pure and simple, and few are typical Rocky Mountain toughs".

In both China and America, there are always two trends of thought representing opposite poles. The two poles can be interpreted and practiced differently. According to Chinese philosophy, the two opposite poles are always seen as poles of one and with same human nature, and thus complementary. But in America and Western society in general, the two poles are treated as contradiction or conflicting. Less efforts are made, like James, to bring them together as a whole. If focuses can be put on working out the differences between opposites, the world will become a better place to live. The development of educational psychology will be more rapidly.

The third comparison is about the emerging of educational psychology from the philosophical to the scientific. The goal for this comparison is to find out whether there are any commonalties between Chinese and American Educational Psychology and whether they are applicable to each other.

Even a quick look at the history of the Eastern-Western behavioral and cognitive encounter suggests some general orientations. First, the two schools in both countries originated from ancient philosophy: China, Yin and Yang or Confucianism and Taoism; America, tender-minded and tough-minded or nativism and empiricism. Secondly, both Chinese and American Educational Psychology were direct products of American functionalism; thirdly, both modern educational psychologists are striving towards the goal of developing this discipline into a more scientific science, though they sometimes do have differences, they are reconcilable and applicable. The definitions of psychology and educational psychology can further confirm the above statements.

The definition of psychology by Webster's dictionary is: "the study of mind and behavior in relation to a particular field of knowledge or activity" (Webster, 1986, p. 951). The Chinese definition by Pan Shu (Pan, 1959, p. 34) is: "psychology is a science whose aim is to explore the material basis of psyche and fundamental laws governing the activities of the brain, as well as the physiological mechanisms underlying them". The definition of educational psychology from Corsini's Encyclopedia of Psychology (Corsini, 1984, p. 413) is: "a psychology concerned with human maturation, school learning, teaching methods, guidance, and evaluation of aptitude and progress by standard tests". The definition by Thorndike on educational psychology is: "the experimental study and measurement of the inherited functions

of intellect, morals, and skills, the improvement of mental functions and the examination of individual differences and their causes".

The Chinese definition of educational psychology is a combination of the above (Pan, 1964, p. 75): "a psychology concerned with human development, school learning and teaching method, the experimental study and measurement of morals, study skills and individual differences". Comparisons showed no great distinction between Chinese and American Psychology or Educational Psychology. There is commonality between Western Psychology and Eastern Psychology; there is connection between American Educational Psychology and Chinese Educational Psychology; there are advantages and disadvantages of each one of the two psychologies; and there are ideas and conceptions they can learn from each other. The mainstream between the two cultures are not fundamentally different and they are reconcilable.

The East-West encounter in educational psychology is certainly not a one-way affair. There is an increasing recognition by the Western psychologists that the intellectual heritage of the Eastern countries has much to offer in the way of psychological concepts and insight. There are two quoted paragraphs from American psychologists who expounded their ideas on the issue of adopting Eastern Psychology cited below:

In 1977, Kenneth Wilber (Wilber, 1977, p. 54) wrote an article viewing Western Psychology and Eastern thought in a framework he called the "spectrum of consciousness." He said that Western

psychotherapies have mainly been involved with egoic or existential issues concerned with healing the split between conscious and unconscious processes of the psyche, or persona and shadow, or the dualism of subject and object or of being versus nullity.

Roger Walsh et al (Walsh, et al, 1980, p. 72) in the Paradigms in Collision described the different levels and aims of psychotherapeutic intervention as: "(1) traditionally therapeutic: reducing pathology and enhancing adjustment; (2) existential: confronting the questions and problems of existence; and (3) soteriological: enlightenment, transcendence of the problems first confronted at the existential level". They concluded that Western psychology and therapies focus on the first two levels, while the third is the chief goal of the consciousness disciplines which incorporate Eastern thought.

It might be true that traditional Chinese philosophical thought, focusing more on the awakened state or enlightenment, emphasized the personal, empirical approach to knowledge more than the Western modern path of scientific, impersonal, objective knowledge, but that does not mean Eastern psychology is not worth studying. While Chinese educational psychologists tried to adopt the scientific methods from the West as much as they could, their counterparts in America can learn something as well. Actually, many educational psychologists began to complain that the American Educational Psychology was too exclusively Western and needed to draw on Eastern sources as well. Maslow in one of his publications addressed this issue. He said: "The Western



psychology turns too much to the objective, the public, the outer, the behavioral, and should learn more about the subjective, the private, the inner, the meditative.... We are discovering more and more, as we study personality in the depths rather than at the surface, that the deeper we penetrate the more universality we find.... The non-academic psychologists of the East have always known this; we in the West must learn it too" (Maslow, 1956, p. 359).

Mystical experience is necessary to understand the deepest nature of things and science is essential for modern life. Introspection is necessary to understand the deepest nature of being human and observation is essential for social life. What humans need, therefore, not a synthesis, but a dynamic interplay between internal and external science; an objective observation and subjective introspection or, in this situation, the dynamic interplay between the Western culture and the Eastern culture.

As Werner Heisenberg pointed out: "It is probably true quite generally that in the history of human thinking the most fruitful developments frequently take place at those points where two different lines of thought meet. These lines may have their roots in quite different parts of human culture, in different times or different cultural environments or different religious traditions: hence if they actually meet, that is, if they are at least so much related to each other that a real interaction can take place, then one m

Some suggestions might be useful for any further studies on the development of educational psychology in China and America from both personalistic and naturalistic perspectives:

1. Further comparison could be done between Chinese Taoism and Western empiricism, such as Chuang Tzu with Aristotle, in order to find more commonalties between them in terms of their analysis of the material world; between Confucius and Plato; and Chinese Confucianism and Western nativism on the issues of spiritual world;

2. Explore more similarities between Lao Tzu and James, the theory of Yin and Yang vs. the notion of Tender- and Tough-minded;

3. From the naturalistic point of view, during the thirteenth century, after a long term of dispute between Confucianism and Taoism in China and nativism and empiricism in the West, there was a trend of unification of the opposites. In the West, there was Aquinas who tried to put Plato's and Aristotle's philosophy together, and in China, Chu Shi who proposed a combination of Taoism, Confucianism with Buddhism. Is this a coincidental phenomena or an inexorable trend?

4. Seek an accurate answer of why American philosopher and psychologist, Dewey and his pragmatic philosophy and functional psychology so well fit into the Chinese practical Confucianism.

## References

- Allen, G. W. (1967). William James: A biography. New York: Viking.
- Angell, J. R. (1907). The province of functional psychology. Psychological Review, 14, 61-91.
- Annin, E. L. Boring, E.G., & Watson, R. I. (1968). Important psychologists, 1600-1967. Journal of the history of the behavioral sciences, 4, 303-315.
- Aquinas, T. (1951). Summa theologica. NY: Oxford University.
- Aristotle (1902). Concerning memory and reminiscence. Thompson, (Trans.). Oxford: Clarendon.
- Aristotle (1902). De anima. Hammond, W. (Trans.). New York: Macmillan.
- Aristotle (1902). Parva naturalia. Hammond, W. (Trans.). New York: Macmillan.
- Ashvaghosha (1900). The awakening of faith. Suzuki, D.T.(Trans.). Chicago: Open Court.
- Augustine (1873). On the trinity. Haddan, A. W. (Trans.). Edinburgh.
- Augustine (1949). Confessions. Pousey, E. (Trans), New York: Modern Library.
- Bohr, N. (1958). Atomic physics and human knowledge. New York: John Wiley & Sons.
- Baum, W. (1994). Understanding Behaviorism. Harper Collins.

- Berkeley, G. (1949-1957). The works of George Berkeley.  
A. A. Luce & T. E. Jessop (Eds.). London: Thomas Nelson.
- Boring, E. G. (1927). Edward Bradford Titchner, 1867-1927.  
New York: Appleton-Century-Crofts.
- Boring, E. G. (1929/1957). A history of experimental  
psychology. New York: Appleton-Century-Crofts.
- Bower, B. (1996). Bridging the brain gap. Science News, 150,  
18, 280-281.
- Brown, L. B. (1981). Psychology in contemporary China.  
American Journal of Psychology. 38, 489-500.
- Bruner, J. S. (1966). Studies in cognitive growth. New York:  
Wiley.
- Bugental, J. (1967). Challenges of humanistic psychology. New  
York: McGraw-Hill.
- Capra, F. (1977). The Tao of physics. Shambhala Publications,  
Inc.
- Case R. (1972). Learning and development: a neo-Piagetian  
interpretation. Human Development, 6, 339-358.
- Chin, R. & Chin, A. L. (1969). Psychological research in  
communist China:1949-1966. Cambridge.
- Chuang T. (1971/1974). Inner chapters. New York: Vintage  
Books.
- Copleston, F. (1985). A History of Philosophy. New York: Image  
Books. (Originally published 1963).
- Corsini, R. J. (1984). Encyclopedia of psychology. New York:  
John Wiley.

- Creel, H. G. (1953). Chinese thought from Confucius to Mao Tsetung. Chicago: University of Chicago.
- Darwin, C. (1885). On the origin of species by means of natural selection. London: Murray. (Originally published in 1859).
- Descartes, R. (1637). Passions of the soul. Torrey, P. (Trans.). New York: Henry Holt.
- Descartes, R. (1650). Treaties on man. Hall, T. S. (Trans.). Massachusetts: Harvard University.
- Dewey, J. (1896). The reflex arc concept in psychology. *Psychology Review*, 3, 359-370.
- Dewey, J. (1898). Psychology. New York: Harper & Brothers Publishers.
- Dewey, J. (1922). Human nature and conduct. New York: Henry Holt.
- Dykhuisen, G. (1973). The life and mind of John Dewey. Carbondale: Southern Illinois.
- Ebbinghaus, H. (1885). On memory. Leipzig: Duncker & Humblot.
- Erikson, E. (1968). Identity: youth and crisis. New York: Norton.
- Erikson, E. (1980). Identity and the life cycle. New York: Norton.
- Fairbank, J. (1972) The United States and China. Massachusetts: Harvard University.
- Feng, Y. L. (1953). A short history of Chinese philosophy. New York: Macmillan.

- Galton, F. (1896). Heredity genius. London: Macmillan.
- Gao, J. F. (1985). The history of Chinese psychology. People's Educational Press, China. (Chinese).
- Glovers, A. J. & Ronning R. R. (1987). Historical foundations of educational psychology. New York: Plenum Press.
- Hartley, D. (1749, 1912). Observations on man. his fame, his duty, and his expectations. London: J. Leake & W. Frederick.
- Hilgard, E. (1956). Theories of learning. New York: Appleton Century.
- Heidbreder, E. (1933). Seven psychologies. New York: Appleton Century.
- Heisenberg, W. (1971). Physics and beyond. New York: Harper and Row.
- Hobbes, T. (1951). Human nature. New York: Collier.
- Hothersall, D. (1990). History of psychology. New York: McGraw-Hill, Inc..
- Hume, D. (1739). A treatise upon human nature. London: Oxford.
- Hume, D. (1748). An inquiry concerning human understanding. London: Dent.
- James, W. (1899) Talks to teachers. New York: Holt.
- James, W. (1899). The principles of psychology. New York: Longman, Green.
- James, W. (1907). Pragmatism. New York: Longman, Green.

- Kant, I. (1896). Critique of pure reason. Muller, M. (Trans.).  
New York: Macmillan.
- Kant, I. (1908). Critique of practical reason. Abott, T. K.  
(Trans.). Boston: Houghton  
Mifflin.
- Kendler, H. H. (1963). Basic psychology. New York: Appleton-  
Century-Crofts.
- Koffka, K. (1922). Perception: an introduction to the gestalt  
theories. Psychological Bulletin, 19, 531-585.
- Kohler, W. (1944). Max Wertheimer, 1880-1943. Science, 209, 33-  
42.
- Kohler, W. (1947). Gestalt Psychology. New York: Liveright.
- Kuo, Z. Y. (1921). Giving up instincts in psychology. Journal  
of Psychology, 18, 645-664.
- Kuo, Z. Y. (1924). A psychology without heredity. Psychological  
Review, 31, 427-448.
- Kuo, Z. Y. (1930). The genesis of the cat's responses to the  
rat. Journal of Comparative Psychology, 11, 1-35.
- Lapointe, F. H. (1970). Origin and evolution of the term  
"psychology". American Psychologist, 25, 640-646.
- Liu F. (1957). On Western psychology. Guang Ming Ri Bao.  
(Chinese).
- Locke, J. (1975). An essay concerning human understanding.  
In P. Nidditch ( Ed.). New York: Barron's Educational  
Series.



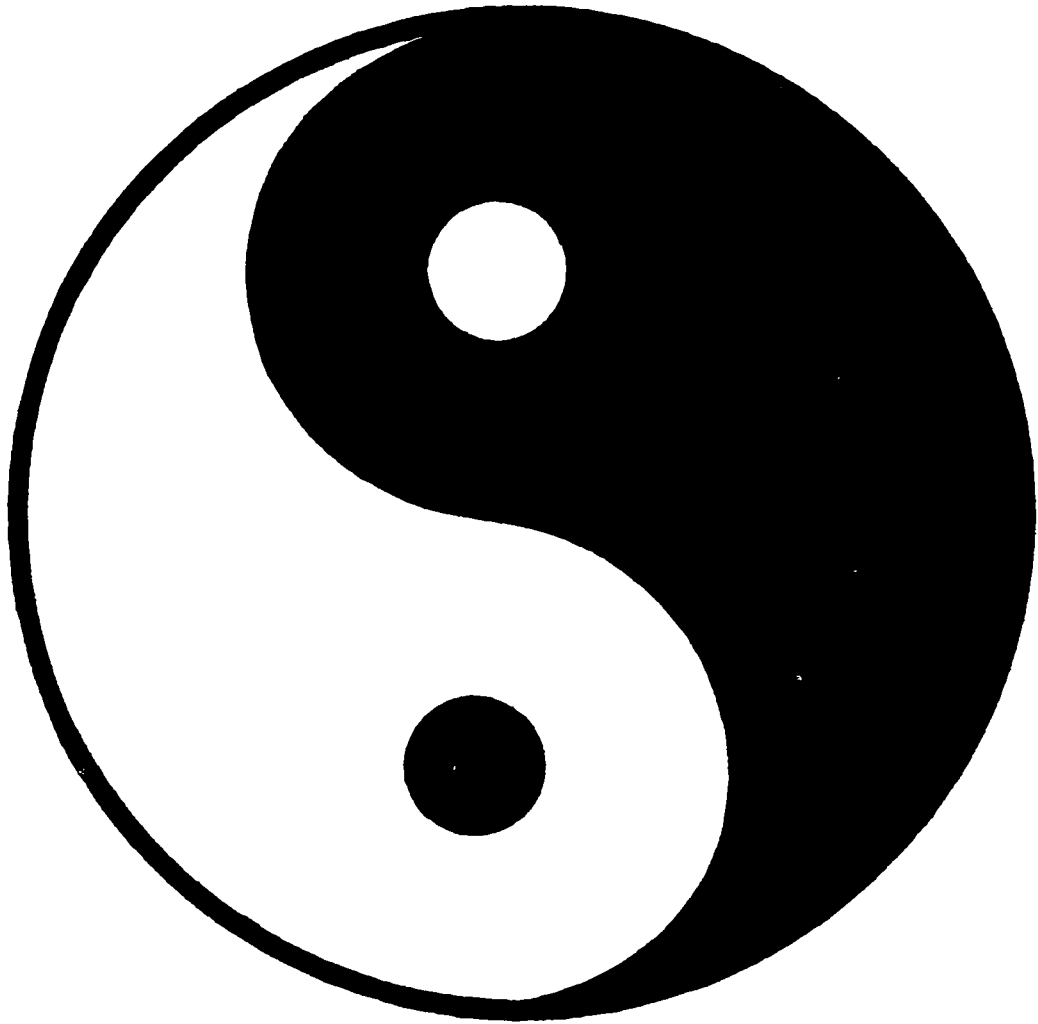
- Mao, T. (1945). On collation government. In Selected works of Mao Tsetung. Foreign Language Press. (Chinese).
- Mao T. (1966). On practice. Peking: Foreign Language Press.
- Marx, K. (1967). The communist manifesto, Moore, S. (Trans). London: Penguin. (Original work published 1848).
- Marx, K. (1975). On education, women and children in The Karl Marx Library S. K. Padover (ed.) New York: McGraw-Hill.
- Marx K. (1977). Karl Marx: Selected writings. London: Oxford.
- Maslow, A. H. The farther reaches of human nature. Journal of Transpersonal Psychology, 1, 1-9.
- May, R. (1961). Existential psychology. New York: Random House.
- Mill, J. (1912). Analysis of the phenomena of the human mind. In B. Rand The classical psychologists Boston: Houghton-Mifflin. (Original published in 1829).
- Misiak, H, & Sexton, V. S. (1966). History of psychology: An overview. New York: Grune & Stratton.
- Morris, V. C. (1966). Existentialism in education. New York: Harper & Row.
- Murphy. G. (1968). Asian psychology. New York: Basic Books Inc.
- Newell, A. & Simon, H. A. (1969). Human problem solving. Englewood Cliffs, New Jersey: Prentice Hall.
- Neisser, U. (1967). Cognitive Psychology. New York: Appleton-Century-Crofts.

- Ni, C. F. (1957). A preliminary criticism of behaviorism of J. B. Watson. Acta Psychologica Sinica.1, 2, 194-200.  
(Chinese).
- Ozmon H. A. & Craver, S. M. (1995). Philosophical Foundations of Education. Columbus, Ohio: Prentice Hall.
- Pan, S. (1959). Educational psychology. People's Press.  
(Chinese).
- Pan, S. (1982). History of educational psychology. People's Press. (Chinese).
- Paranjpe, A. C. Ho, D. & Rieber, R. W., (1988). Asian contributions to psychology. New York: Westport.
- Pavlov, I. P. (1928). Lecture on conditioned reflexes. Petrograd.
- Petzold, M. (1984). The history of psychology in the People's Republic of China. Journal of the German Association for Asian Studies, 12, 55-71.
- Piaget, J. (1950). The psychology of intelligence. New Jersey: Littlefield, Adams.
- Piaget, J. (1953). Logic and Psychology. Manchester: Manchester University Press.
- Piaget, J. (1954). The origins of intelligence in children. New York: International Universities Press.
- Plato (1888). Theatetus. B. Jowett (Trans.). Oxford: Clarendon Press.
- Plato (1902). The republic of Plato. J. Adam (Ed.). Cambridge: Cambridge University.

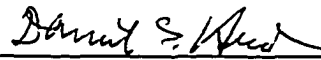
- Plato (1952). Gorgia (Socratic Dialogue). In R. M. Hutchins (Ed.). The great books of the Western world. Chicago: Encyclopedia Britannica.
- Research Notes (1996). Behavior. Science news. 150, 218.
- Sahakian, W. S. (1980). History of psychology. F. E. II: Peacock.
- Schultz, D. (1975). A history of modern psychology. New York: Academic Press.
- Simon, H. A. (1969). The science of the artificial. Massachusetts: MIT Press.
- Simon, H. A. (1954). The logic theory machine. IRE Transactions on Information theory.
- Skinner, B.F. (1951). How to teach animals. Scientific American, 185, 26-29.
- Skinner, B. F. (1966) The Behavior of organisms. New Jersey: Englewood Cliffs.
- Skinner, B. F. (1972). Beyond freedom and dignity. New York: Bantam.
- Skinner, B. F. (1979). The Shaping of a behaviorist. New York: Knopf.
- Skinner, B. F. (1990). The origins of cognitive thought. American psychologist, 44, 13-18.
- Thorndike, E. L. (1903). Educational psychology. New York: Teachers College.
- Thorndike, E. L. (1913-1914). Educational psychology. New York: Teachers College.

- Titchner, E. B. (1898). The postulates of a structural psychology. Philosophical Review. 7, 449-465.
- Tsao J. (1961). "Why should we discuss the nature of psychology?" Guang Ming Ri Bao. (Chinese).
- Wahl, J. A. (1949). A short history of existentialism. New York: Philosophical Library.
- Wang, A. S. (1990). Cognitive strategies in solving covariance-problems in process control. Ergonomics, 33, 891-908.
- Wang C. (1961). Mainland China organizations of higher learning in science and technology and their publications. A selected guide. Washington DC: Library of Congress.
- Wang, Z. M. (1993). Psychology in China: a review dedicated to Li Chen. Annual Review Psychology. 44, 87-116.
- Watson, J. B. (1913). Psychology as the behaviorist sees it. Psychology Review, 20, 158-177.
- Watson, J. B. (1924). Behaviorism. New York: Norton.
- Websters new dictionary. (1986). Webster Press.
- Westbrook, R. (1991). John Dewey and American democracy. New York. Cornell University Press.
- Whitehead, A. N. (1967). Science and the modern world. New York: Macmillan.
- William. J. (1890). Psychology. New York: Henry Holt.
- William, J. (1902). The varieties of religious experience: A study in human nature. New York: Longman.
- Wittrock, M. C. (1977). The human brain. Englewood Cliffs, New Jersey: Prentice Hall.

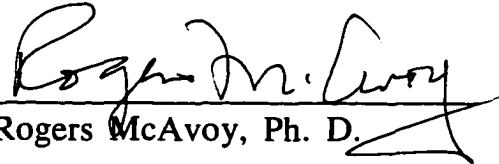
- Woodworth, R. S. & Schlosberg, H. (1954). Experimental psychology. New York: Holt.
- Woolfolk, A. E. (1990). Educational psychology. New Jersey: Prentice Hall.
- Wundt, W. (1897). Outlines of psychology. New York: Gustav.
- Yang, C. C. (1961). Acta Psychologica. People's Press.  
(Chinese)
- Zhang, H. C. (1988). The contributions of psychology to education in China. School Psychology International.
- Zhang, D. X. (1982). Study on educational psychology. People's Educational Press.



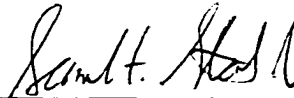
APPROVAL OF EXAMINING COMMITTEE



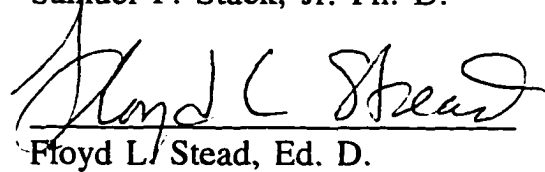
Daniel E. Hursh, Ph. D.  
(Committee Chair)



Rogers McAvoy, Ph. D.



Samuel F. Stack, Jr. Ph. D.



Floyd L. Stead, Ed. D.

5/2/97

Date



Diane Woodrum, Ed. D.