

Natural Psychology

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Introduction

Natural Psychology explains all human psychology including mental distress with elemental neuroscience; it explains psychology by identifying and solving anomalies of the scientific principles of the current psychology/psychiatry paradigm. Theoretical problems started early in the history of modern psychology after it was founded on two competing thinking theories and psychologists migrated to one theory rather than integrating the two. Neo-rationalism was advocated by Rationalists; this legacy of rationalist philosophers evolved into the foundation of our current, erroneous psychology/psychiatry paradigm. Lost to current thinking theory is the advocacy of Associationists (led by David Hartley, James Mill, John Stuart Mill and Alexander Bain); they advocated rationality based on *associative thinking*. Associative thinking is the legacy of classical British empiricism and earlier advocated by ancient Greek philosophers. Associative thinking is based on connecting simultaneously occurring sensory stimuli and ideas; trillions of associations produce rational consciousness including some admirable intellectual thoughts and altruistic behaviors. Early behaviorists including Pavlov and Skinner advocated and proved associative thinking with behavior conditioning but the domination of neo-rational philosophy trumped science and the ability to integrate the two theories. Instead of integrating the science of associative thinking, it was relegated to learning theory. Behavior conditioning proves associative thinking after a behavior is learned; it is illogical for numerous repetitions of a stimulus/response to exemplify repeated learning of the same behavior. It is unfortunate that a neo-rational mental principle excluding associative thinking became the accepted psychology paradigm before neuroscience developed because basic empirical neuroscience proves associative thinking. It is also unfortunate that a neo-rational mental principle became the accepted psychology/psychiatry paradigm before quantum mechanics developed because it explains how associative thinking is less mechanistic than previously thought. Basic tissue neurophysiology explains associative thinking and also explains the motivation that directs associative thinking. Motivation neurophysiology directing thinking neurophysiology is a comprehensive theory of binary biological psychology. Natural Psychology is real science that explains all human psychology including mental distress.

The erroneous belief that painful mental distress is a “mental disorder” is based on the erroneous assumption of a neo-rational mental principle rather than rationality based on associative thinking and quantum mechanics. Our culture socially constructs an abstract, complex, neo-rational mental principle and considers unusual and undesirable thoughts and behaviors as a disorder of that process. This is a logical deduction from a false premise (Davies,

2013). Unfortunately, the erroneous assumption that mental distress is a biological failing legitimizes the harmful medical model of mental distress. While our culture logically seeks medical solutions to biological failings, this thesis explains mental distress as a social welfare problem of painful emotional suffering and anti-social reactions to the suffering. Natural Psychology challenges the current psychology/psychiatry paradigm that describes mental distress as medical problem; it explains the elemental empirical neuroscience of mental distress. Mental distress is natural emotional suffering and anti-social reactions to the suffering; it is the normal neurobiology of distressful experiences. Cultural leaders promote their self-serving bias and cultural expectations for an ambiguous neo-rational mental principle but rational consciousness based on associative thinking is elegant science that explains human psychology.

Natural Psychology is a parsimonious new psychology/psychiatry paradigm that is presented in a simple format. Chapter One describes a true natural science foundation for psychology and addresses basic scientific failings of the current psychology and psychiatry paradigm. Chapter Two explains thinking theory; associative thinking explains rational consciousness and the cognitive process based on neuroscience that is observable and verifiable. Chapter Three follows an advocacy of thinking theory with motivation theory; elementary empirical neuroscience explains the motivation for the mental process and behavior. Consistent with natural science theory, our natural motivation explains evolutionary theory and the motivation for behavior to seek species survival. Understanding the binary (systems) neuroscience of our common thinking neurophysiology and common motivation neurophysiology promotes an understanding of the importance of unique individual experience in Chapter Four. This chapter describes how singular personal experience directs our common motivation and thinking neurophysiology. This glorious mental process is a radical paradigm shift for intellectuals who define themselves in terms of a unique, innate intellect; this thesis appeals to a reverence for science over established social constructs. Consistently, Chapter Four disputes behavioral genetics and challenges the pseudoscience that supports it. Following the description of motivation directing associative thinking based on singular experience, Chapter Five explains human psychology. This comprehensive explanation of psychology unifies the essence of all of the current schools of psychological thought: structural, functional, biological, behavioral, psychodynamic, humanistic, sociocultural and cognitive. A unified theory of psychology promotes a comprehensive explanation of mental distress in Chapter Six; this chapter explains the natural biology of emotional suffering and anti-social reactions to the suffering. Consistent with understanding mental distress in Chapter Six, Chapter Seven proposes “mental health” care for individuals and the community. The term *mental health* is herein used in a social welfare

context rather than a medical context. The final chapter is a summary that emphasizes the difficulty of making a classical paradigm shift from a complex neo-rational mental principle to a simple principle of associative thinking. Chapter Eight also emphasizes the social value of transitioning to a psychology/psychiatry paradigm with substantially more scientific truth.

Natural Psychology includes numerous appendixes that are presented separately so that the main thesis is not interrupted by large digressions. The first three appendixes are more extensive discussions of a true natural science foundation for psychology. Appendix A is an additional discussion of biological reductionism and neo-dualism, Appendix B is an additional discussion of simple mental principles, and Appendix C is an additional discussion of the basic science principles of physiology and neurophysiology. Appendix D and Appendix E are more extensive explanations of the neuroscience of thinking and motivation respectively. Appendix F explains popular psychology theory from the perspective of Natural Psychology. Appendix F provides a unified understanding of popular theories about learning, cognition, memory, mental states of consciousness, perception, intelligence, personality, language, and social psychology. Appendix G is a more extensive discussion of the scientific failings of the popular medical model of mental distress. Consistently, Appendix H explains current theories about mental distress from the perspective of this new paradigm. Appendix H provides a unified understanding of popular theories about anxiety disorders, eating disorders, substance-abuse disorders, mood disorders, somatoform disorders, dissociative disorders, personality disorders, and schizophrenia disorders. Lastly, Appendix I discusses falsifying this theory consistent with the philosophy of science requisite for legitimizing science theories. Since Natural Psychology is logically deduced from elementary empirical neuroscience, falsifying this treatise depends on falsifying basic neuroscience or logical deductions from basic neuroscience.

Natural Psychology is better science than the current psychology/psychiatry paradigm because science centers on parsimony (“Ockham’s razor”) and Natural Psychology is far more parsimonious. Parsimony is the main theoretical principle of science; it advocates that all other things being equal, the simplest theory is the best. More precisely, parsimony advocates that fewer assumptions make better science. Natural Psychology makes no assumptions; it explains human psychology with basic, accepted neuroscience. Logicians advocate prioritizing scientific principles to consider their relative importance; fundamental principles are more important than obscure principles and fundamental anomalies are more problematic than anomalies of obscure principles. With 6,000-8,000 doctoral theses in psychology and psychiatry annually, obscure empirical studies can support or reject any detail of current psychology theory (McIntyre, 2006, p. 24). This thesis only addresses basic principles and basic scientific failings of current theory.

This thesis provides no original research; it is explained with logical deductions from elemental biological reductionism. Natural Psychology is based on widely accepted science principles, widely accepted empirical neuroscience and logical deductions from them. In contrast, popular psychology theory is based on scientific contradictions at its core; this thesis identifies and solves the basic scientific failings of the popular psychology/psychiatry paradigm. It is a common theoretical error to believe that more details about psychology are synonymous with more understanding; logicians consider this circular reasoning. This short thesis does not address details about the current psychology/psychiatry paradigm; it only addresses fundamental principles and fundamental anomalies.

Natural Psychology is a classical paradigm shift to better natural science as described by Thomas Kuhn (Kuhn, 1962). This thesis is a complete departure from the assumption of complex principles of neo-rationalism to consider a simple mental principle of associative thinking. Natural psychology is a paradigm shift from a complex, abstract neo-rational mental principle to a simple principle of rationalism based on associative thinking; it is far more parsimonious- better science. Popular psychology theory is a classical paradigm; it is a complete world view supported by terms with interrelated connotations and contexts that reinforce the status quo. A classical paradigm shift is difficult to understand from the perspective of the popular paradigm regardless of more parsimony and the ability to solve significant anomalies of the established paradigm. Natural Psychology is simple and inclusive while current psychology theory is neither simple nor inclusive. But it is difficult to change an ingrained world viewpoint and consider an alternative. This thesis implores the reader to suspend belief in a massive quantity of complex, ambiguous support for accepted psychology theory and follow basic natural science.

Natural Psychology explains human psychology including mental distress with elementary neurosciences; it is an elegant theory of biological psychology. Natural Psychology is based on the binary neuroscience of motivated-thinking; this is consistent with neuroscientists modeling the brain after computers that operate on a principle of binary science. Although paradigm shifts are difficult, understanding behavior and the mental process will promote a renaissance of scientific and social advances, and a significant improvement in the human social condition.

I

Scientific Principles of Human Psychology

Natural Psychology is true reductionist, parsimonious natural science; it explains human psychology with elementary empirical neuroscience while solving four fundamental anomalies of the scientific foundation of the current psychology/psychiatry paradigm. It is unfortunate that the neuroscience focus is on the scientific method while it neglects the basic principles of organic sciences. The current psychology/psychiatry paradigm erroneously: 1) advocates an abstract philosophy of mind in contrast to biology, 2) lacks consideration of simple mental principles consistent with natural science, 3) lacks consideration of tissue neurophysiology consistent with how physiology explains all other organs of the body, and 4) lacks falsifiability consistent with the philosophy of science requisite. An abstract philosophy of mind is the only basic scientific failing of popular theory that has been regularly challenged by scientists (especially biologists). In contrast, scientific failings of natural science (failing to consider simple mental principles), physiology (failing to focus on tissue neurophysiology), and the philosophy of science (failing to advocate falsifiability) are rarely addressed. These four scientific anomalies are not failures of details of popular psychology theory; they are inconsistencies with basic science principles. These scientific failings at the foundation of popular psychology theory skew all the science that is built upon them; solving these anomalies promotes a scientific understanding of human psychology.

It is a fundamental scientific anomaly of popular psychology theory that psychologists generally advocate an abstract philosophy of mind in contrast to biology- biological reductionism. Natural science and biology implore reductionism yet the predominance of psychologists and psychiatrists believe in the neo-dualism of a mind beyond the physical (material) brain. Classical dualism advocated an imagined soul that was separate from the physical brain; neo-dualism philosophizes about a mind that mediates between the biological brain and the environment. Popular theory uses scientific terminology and methodology to philosophize about an abstract mind but since the mind is not physical, it cannot be the subject of scientific investigation. The philosophy of mind may be less theological and more philosophical than the classical dualism of "body and soul," but the mind remains abstract philosophy- not science theory. The popular biopsychosocial theory describes a combination of biological, psychological and social factors that interact to produce psychology (American psychiatric Association, 2000, p. 27). Each of the three factors of the biopsychosocial theory is generally believed to contribute to mental distress in

varying degrees for different problems in different people. The biopsychosocial theory is a social construct that supports cultural expectations for a philosophy of mind; psychological factors are separate from biological factors. The ambiguous psychological factor of the biopsychosocial model is ad hoc theory that is impossible to falsify; the failure to falsify the mind is addressed later in this chapter. Consistently, the popular adage that “the mind is what the brain does” is an attempt to reify the actions of the brain- to turn actions into a concrete, physical entity. It is a basic anomaly of popular psychology theory to purport a foundation on biological reductionism and nevertheless advocate an abstract philosophy of mind. In contrast, Natural Psychology explains psychology with elementary empirical neuroscience; an abstract philosophy of mind is extraneous to the scientific understanding of behavior and the mental process. The scientific fallacy of a philosophy of mind is discussed in more detail in Appendix A.

It is a second fundamental anomaly of popular psychology theory that it lacks consideration of simple principles. It is a basic scientific anomaly of popular psychology theory to assume that the brain works on complex principles when our most eminent natural scientists advocate that human nature is based on simple principles. Einstein, Brian Greene, Steven Weinberg, Walter Lewin and other leading natural scientists contend that human nature is based on simple principles that are hidden beneath an appearance of complexity (Lewin, 1998; Greene, 1999; Weinberg, 2003). 100 trillion neural connections create complex thinking and complex behavior but they do not prove a complex mental principle. Moreover, it is a basic scientific anomaly to assume that the brain functions through complex mental principles while modeling the brain after computers that operate based on binary science- the simplest math principle. More importantly, it is a fundamental failure of scientific logic for popular psychology theory to assume complex mental principles while not understanding mental principles. Psychologists may assume complex mental principles because it is generally believed that simple principles would be obvious to scholars but that is not true. It is extremely difficult to cull out simple principles of psychology from the massive quantity of ambiguous, convoluted, complex popular theory. Simple mental principles are also difficult to discover because they are not sought; it is extremely difficult to discover a theory that is not sought. Simple mental principles are also not sought because they have a problematic history; simple psychology theories have been predominately wrong. But regardless of past problems with oversimplification in psychology, it is unscientific to ignore the possibility that simple mental principles produce complex cognition and complex behavior. The fallacy of ignoring simple principles of human psychology is discussed in more detail in Appendix B.

It is a third fundamental scientific anomaly of popular psychology theory that it lacks a

focus on tissue physiology consistent with physiology theory and how physiologists explain all other organs. Anatomy and physiology texts explain organs with tissue physiology, explain tissues with cell physiology and explain cells with molecular physiology (Tortora, 2008; Martini, 2011; Marieb, 2012). All organs are explained by systems of tissues- by four kinds of body tissues. Organs are explained by muscle tissue, connective tissue (bone, tendon and teeth tissue), epithelial tissue (skin and organ wall tissue) and nervous tissue. Anatomy and physiology texts explain all organs with systems of tissues- at the organizational level of tissues. For instance, the heart nourishes the body with blood circulated by a pump created with muscle tissue, valves created by connective tissue and pipes created by epithelial tissue. Consistently, the lungs create respiration (absorbing oxygen and dispelling carbon dioxide) with chambers made of epithelial tissue (that mediate between the environment and the body) and muscle tissue to force the exchange. Tissue physiology is far easier to understand than cellular or molecular physiology since larger organizational levels of the body are progressively more general and easier to understand. For instance, the function of the tissues of the heart or the lungs is far more general and easier to explain than the cells that explain these tissues. Consistently, the function of the cells of the heart or the lungs is far more general and easier to explain than the molecules that explain these cells. Anatomy and physiology texts explain organs as the cumulative effect of tissue physiology and tissue physiology as the cumulative effect of cellular physiology. Since neuroscientists have a basic understanding of the function of neuron cells (and glial cells), they have all the information they need to explain nervous tissue and thereby explain the brain.

Unfortunately, simple tissue neurophysiology producing complex thinking and complex behavior is ignored because it contradicts the social construction of complex mental principles. Systems neuroscience currently assumes complex principles that support the intellectual identities of most scholars but physiology theory and natural science beg for the consideration of simple principles. An assumption of complexity rather than sound science theory motivates neuroscientists to usurp simple tissue neurophysiology with complex molecular neuroscience and complex (and abstract) system neuroscience. The complexity of the current systems neuroscience and molecular neuroscience investigations borders on absurdity. Systems neuroscience is far too abstract to control the number of assumptions inherent in their theories. Similarly, molecular physiology is currently far too complex to explain any cell of the body; it is illogical to believe that it can explain a tissue much less an organ. Tissues explain organs; investigating cellular neuroscience to understand the brain skips a generation of information about psychology and investigating molecular neuroscience skips two generations of information. Investigating cellular neuroscience to understand psychology “fails to see the forest for the trees”;

investigating molecular neuroscience “fails to see the forest for the tree *needles*.” Investigating molecular neuroscience to understand psychology is analogous to investigating the molecular structure of pistons and spark plugs to understand the function of an automobile engine. In contrast to the complexity of popular theory, Natural Psychology explains psychology with simple tissue neurophysiology. Physiologists explain all organs with tissue physiology; consistently, tissue neurophysiology explains the function of the brain. The binary system of nervous tissue structured for motivation directing nervous tissue structured for thinking is a parsimonious explanation of human psychology. The fallacy of ignoring simple tissue neurophysiology is discussed in more detail in Appendix C.

It is a fourth fundamental scientific anomaly of popular psychology theory that it lacks falsifiability. The philosophy of science describes falsifying a science theory as a fundamental requisite for legitimacy (Popper, 1959). Falsifiability advocates that a science thesis must describe the most likely scenario for disproof. Falsifiability is the main method that the philosophy of science uses for differentiating between real science theories and ad hoc (or post hoc) theories. In contrast to current psychology theory, Natural Psychology is falsifiable as described in Appendix I.

The current psychology/psychiatry paradigm is based on a vast quantity of pseudoscience from vested interests as well as fundamental contradictions of the principles of basic sciences. Money corrupts science and there are two powerful industries that are heavily vested in the current paradigm. Psychiatrists invest a medical school education and medical school debt in the medical model of mental distress as well as their substantial income. The pharmaceutical industry is similarly vested in the medical model to the tune of 80 billion dollars in annual sales of psychotropic drugs. Scientists advocating for the health benefits of cigarette smoking should be a continual reminder of the power of money to skew science.

Scientists currently use the scientific method to prove and explain the current psychology/psychiatry paradigm with pseudoscientific assumptions; as information technologists say, “garbage in, garbage out” (Eysenck, 1978; Ioannidis, 2005; Ioannidis, 2016). Consistently, it is a fundamental challenge to the validity of the increasingly complex Diagnostic and Statistical Manual of Mental Disorders (the DSM) that it redefined a “mental disorder” between the DSM-IV and the DSM-5 (American Psychiatric Association, 2000; American Psychiatric Association, 2013). It is a basic principle of science and logic that a science field cannot change the definition of the subject of their investigation without a sound scientific explanation. Instead, The APA covered their change in definition with staggering obfuscation; most clinicians cannot decipher their word puzzle. The APA redefined referenced psychological syndromes from distressed to

dysfunctional and redefined referenced behavioral syndromes from disabling to dysfunctional in a self-serving move of pure pseudoscience.

The current psychology/psychiatry paradigm socially constructs a complex mental principle of neo-rationalism based on a strong cultural bias (the experimenter expectancy effect) and fundamental scientific failings. Popular psychology theory erroneously: 1) advocates an abstract philosophy of mind in contrast to biology, 2) lacks consideration of simple mental principles consistent with natural science theory and computer modeling, 3) lacks consideration of simple tissue neurophysiology consistent with physiology theory, and 4) lacks falsifiability consistent with the philosophy of science requisite. These four anomalies are not minor problems for current psychology theory; these anomalies of scientific principles are critical problems that derail it.

Natural Psychology is a new paradigm that explains behavior and the mental process while solving anomalies of the scientific foundation of current theory. In contrast to popular psychology theory that accepts an abstract philosophy of mind, this theory explains human psychology with biology- biological reductionism. In contrast to popular psychology theory that socially constructs complex mental principles, Natural Psychology explains psychology with simple binary neuroscience. In contrast to popular psychology theory that is inconsistent with how physiology explains all other organs, Natural Psychology explains psychology with simple tissue neurophysiology. Lastly, in contrast to popular psychology theory that lacks the philosophy of science requisite of falsifiability, Natural Psychology is falsified in the last appendix to this thesis. Natural Psychology identifies and solves scientific failings of current theory; it is based on sound scientific principles and is far more parsimonious.

The popular psychology/psychiatry paradigm assumes a complex, neo-rational mental principle in support of our current intellectual identities but it is inconsistent with natural science principles. This thesis implores the reader to suspend belief in a massive quantity of complex, abstract, ambiguous, and fragmented support for cultural expectations and follow basic natural science theory. Natural psychology is a comprehensive theory of biological psychology and binary (systems) neuroscience that is explained with accepted empirical neuroscience. This new paradigm appeals to a reverence for the tenets of science including parsimony and to the belief that more scientific truth about psychology will improve human civilization.

II Thinking Theory

Consistent with the natural science advocacy of simple principles of human nature, the brain operates through binary science; behavior and the mental process are understandable as motivated-thinking. Consistent with the simple binary science of computers that model the brain, basic motivation neurophysiology directs basic thinking neurophysiology. It is critical to separate thinking theory from motivation theory to understand human psychology; current thinking theory includes elements of motivation. Natural Psychology advocates that associative thinking produces rational consciousness; this is a more basic concept of thinking whereby the thinking process is separate from the motivation that directs it. This is a revival of an intellectual tradition advocated by Associationists who founded psychology (with Rationalists), classical British empiricists and ancient Greek philosophers. Associative thinking has never been disproved; instead, the focus shifted to behavior science as thinking theory slowly migrated to an acceptance of cultural expectations for a neo-rational mental principle. Before quantum mechanics proved that the physical universe is not predictable, associative thinking was considered totally mechanistic and predictable. Quantum mechanics changes everything; the individuality and uniqueness of human thought lies not in a neo-rational mental principle but in the spirit of the individual at the quantum level. A complex, neo-rational mental principle is a social construct that supports cultural expectations but it is without a structural and functional foundation on empirical neuroscience. Associative thinking advocated by the Associationists epitomizes a science theory that has been forgotten because it lost its context rather than its scientific truth (Meehl, 1978; Chang, 2004, p.239). In contrast to cultural expectations for a neo-rational mental principle, basic empirical neuroscience now proves that Associationists were correct as well as Rationalists; our rational consciousness is produced by associative thinking with individual influence at the quantum level. Associative thinking appears base and mechanistic from the perspective of our current paradigm, but (at the quantum level) it is glorious in producing our vast, rich array of thoughts and behaviors. It is majestic how associative thinking is able to produce rational consciousness, and admirable thoughts and behaviors.

Associative thinking elegantly produces rational consciousness through a stream of consciousness (selective attention) whereby each associative thought is the strongest association of the previous thought or sensory data. Associative thinking typically produces rationality but this does not prove that the brain operates on a principle of rationality. Reasoning that $A = C$ if $A = B$

and B=C is a learned association of the first element with the later two elements. Basic neurophysiology explains associative thinking and behavior conditioning proves associative thinking for thinking as well as learning; moreover, a storied history of philosophy advocated associative thinking and popular neo-rational theory is disproved.

Elementary empirical neuroscience now explains how associative thinking is the foundation of all thinking including our rational consciousness. Consistent with our understanding of all other organs of the body, tissue physiology explains the brain and thinking- associative thinking. The nervous tissue of the cerebral cortex (the exterior of the forebrain) is thinking anatomy and the general flow of neural communication through the cerebral cortex is thinking physiology. *Associative thinking is explained by the flow of neural information through common neural networks of the nervous tissue of the cerebral cortex.* Connectionist neural networks connect (associate) critical sensory information in the “association area” of the posterior cerebral cortex and thereafter connect more complex associations (ideas) in the “association area” of the frontal cerebral cortex (S. Rose, 1983). Standard nomenclature for the brain labels most of the central posterior and frontal cerebral cortex as “association areas;” this label should be taken more literally than in the past. Connecting (associating) the primary senses of touch, sight and hearing and more complex connections (associations) in the frontal lobe produce complex thoughts and complex behaviors. Although popular theory correctly identifies the neuroscience of connectionist neural networks, it erroneously seeks to adapt this accepted neurophysiology to complex principles of neo-rationalism. Current theory fails to consider an overview of tissue neurophysiology- the general flow of neural information through common neural circuits of the cerebral cortex. Common neural circuits of the nervous tissue of the cerebral cortex explain associative thinking.

Besides elemental empirical neuroscience explaining how associative thinking produces rational consciousness, behavior science proves associative thinking with the empirical science of behavior conditioning as advocated by Ivan Pavlov, Edward Thorndike, John Watson and B.F. Skinner. Early behaviorists advocated associative thinking for all thinking before it was relegated to learning theory and later memory theory. Although behaviorism proves thinking theory, it currently addresses only behavior theory. Classical behavior conditioning proves that thinking is based on a mental process of association when repeatedly demonstrating a conditioned response. After a conditioned response has been learned in classical conditioning, repeating the process of stimulus/response cannot demonstrate repeated learning of the same behavior. It is a significant anomaly of behavior science to describe the repetition of conditioned behaviors as repetitions of learning when learning is defined as a change in behavior. Behavior conditioning

demonstrates associative thinking when a conditioned stimulus occurs immediately preceding or simultaneously with an unconditioned stimulus and thereby becomes associated with it. While classical conditioning uses motivations that are common to a population and operant conditioning uses motivations that are tailored to individuals, both prove associative thinking. Classical conditioning proves associative thinking when a ringing bell becomes a learned association of an electrical shock; demonstrating this learned behavior demonstrates associative thinking. Since association ties all thoughts, conditioned stimuli are generalized; consistently, neutral stimuli can be associated with conditioned stimuli for “second-order” conditioning. Behaviorism now describes associative thinking as a “signaling property” of an event; this contorts associative thinking to support a complex, neo-rational mental process but the traditional term is more honest. Behavior conditioning proves associative thinking (this is discussed further in the following chapter that addresses human motivation). Empirical behavior conditioning proves that all thinking (including cognition, rationality and consciousness) is associative thinking.

Physiological theory and biological reductionism implore scientists to explain the brain and thinking in terms of tissue neurophysiology and further explain tissue neurophysiology with cellular neurophysiology. Tissue physiology is the cumulative effect of cellular physiology; nervous tissue is explained by cellular neuroscience. The function of the nervous tissue of the cerebral cortex is explained by the accepted cellular neurophysiology of neural connections- of neuron cells communicating at their synapses. The cumulative effect of the physical connection of neuron cells from chemicals passing between their synapses is the tissue neurophysiology of associative thinking. It is deductive logic that the general flow of neural information through the cerebral cortex is explained by neuron cells communicating with other neuron cells. The communication between neuron cells at their synapses is an accepted process of cellular thinking that explains thinking at the tissue level- thinking nervous tissue.

Associative thinking is not only proven by empirical behavior science and explained by basic empirical neuroscience, it is also supported by a long, storied history of philosophical advocates. Psychology was founded by Associationists (led by David Hartley, James Mill, John Stuart Mill, and Alexander Bain) who challenged Rationalists with a thinking theory of associationism. Associative thinking failed to maintain popularity because it challenged the social construction of a neo-rational mental principle and failed to explain motivation. Understanding the motivation for associative thinking is critically important considering the cultural appeal of a thinking theory based on a principle of neo-rationalism. The Associationists were the legacy of classical seventeenth and eighteenth century British Empiricists. Associative thinking was advocated by John Locke in his *Essay*, Bishop Berkeley in his *New Theory of Vision*, David Hume

in his *An Inquiry Concerning Human Understanding* (Encyclopedia Britannica, 1911). Classical British empiricists revived a thinking theory of association from early Greek philosophers. Plato was the first to describe associative thinking in *Phaedo* (Encyclopedia Britannica, 1911); Aristotle followed Plato with numerous discussions of his philosophy of associative thinking (Encyclopedia Britannica, 1911).

Thinking producing rationality through association is explained by empirical neuroscience, proven by behavior science and supported by eminent philosophers; moreover, a neo-rational mental principle is disproved by empirical science. Popular thinking theory based on neo-rationalism is empirically disproved by research on eye cataract patients. Esteemed neurologist J.Z. Young studied adult patients who had been blind since birth and then given sight with the development of eye cataract surgery in the 1930's (Young, 1951). These adults were unable to rationally interpret their new visual information; they could not relate visual information into their previously unsighted world (Senden, 1960). As years passed, these patients continued to be unable to rationally interpret the most fundamental visual information. Instead, they struggled with the tedious process of attempting to integrate visual information into a complete world view where visual data had no relevance. Years after surgery, these cataract patients struggled to visually identify the most basic objects; they were unable to identify the difference between a square, a triangle and a circle. Consistently, these cataract patients were unable to identify the relative size of visual objects; they could not identify whether a yardstick was longer than a twelve inch ruler. The answers to these simple questions were only painfully obvious upon touching the objects. These patients were frustrated with the difficulty of learning to integrate newly acquired visual information into their previously unsighted world; there was no rational connection. Since learning is cumulative, it was far more difficult, time consuming, and frustrating for these adults to understand the visual world than for infants to learn the same information. Other investigations of adults who gained eyesight after living blind support this failure to rationalize the meaning of new visual stimuli (Senden, 1960). Consistently, famed neurologist Oliver Sacks disproves a neo-rational mental principle with his case study of a man who gained sight after living blind. "He saw, but what he saw had no coherence...The most 'obvious' connections, usually and logically (rationally) obvious, had to be learned" (Sacks, 1993). The brain creates rational consciousness through associative thinking rather than a neo-rational mental principle.

Although associative thinking is explained by neurophysiology, proven by behavior science and supported by philosophers (and neo-rationalism is disproved by empirical science), it is a complete paradigm shift from popular theory. It is difficult to understand simple associative thinking from the context of the popular assumption of a complex mental process based on neo-

rationalism. Although popular theory correctly identifies the physiological neuroscience of connectionist neural networks, it erroneously seeks to adapt this empirical neuroscience to complex principles of an abstract mind. The popular thinking theory of parallel distributed processing (PDP) of connectionist neural networks fails to appreciate the big picture. PDP fails to consider the general flow of neural communication through connectionist neural networks of the cerebral cortex. Instead, popular PDP theory philosophizes about the complexity of processing “nodes” (units) of information or the increasingly popular concept of processing partial information “chunks.” There is no structural and functional empirical neuroscience support for units of information in the brain regardless of how small or partial the units. All complex ideas and complex behaviors are produced by the simple thinking process of connecting sensory information in complex patterns; this is observable and verifiable science.

Associative thinking is apparent when studying learning and memory; the process is less conspicuous when thinking about the present. Classical behavior conditioning exposes associative thinking by isolating unusual associations; it is difficult in the process of normal living to have strong enough associations that associative thinking is apparent. An example of associative thinking is when a war veteran diving for cover after hearing a firecracker or a car backfires. Associative thinking is apparent in substantial habituated behavior but this is difficult to isolate for empirical study. Associative thinking is apparent through introspection when considering unexpected thoughts; an unexpected thought is the strongest association of the previous thought or sensory stimuli (location, color, smell, person, activity, etc.). Thus, when music is the background of an extremely emotional experience, hearing the same music later prompts associated memories and emotions. Conditioning oneself to explore the source of unusual thoughts exposes associative thinking.

Human psychology is understandable based on a simple process of associative thinking that creates complex thoughts and complex (and moral) behaviors. Consistent with biological reductionism and physiology theory, associative thinking is explained by tissue physiology- the nervous tissue of the cerebral cortex. The cerebral cortex is thinking anatomy and the common flow of neural communication through the cerebral cortex is thinking neurophysiology. Connectionist neural networks associate sensory information in the posterior cerebral cortex and thereafter associate more complex information in the frontal cerebral cortex. Consistent with biological reductionism, the tissue neurophysiology that explains associative thinking is further explained by cellular neurophysiology. Accepted cellular neurophysiology of neurons communicating at their synapses explains tissue neurophysiology that explains the brain and associative thinking. Molecular neurophysiology may eventually explain cellular neurophysiology

but it is unnecessary for understanding thinking. The neuroscience of associative thinking is explained in more detail in Appendix D.

Human psychology is understandable in terms of binary (systems) neuroscience; motivation neurophysiology directs the thinking neurophysiology of association to produce rational consciousness. Associative thinking explains all thinking; it not only explains cognition, rationality and consciousness, but it also explains all thinking that is not cognitive, rational nor conscious. Cultural expectations for a thinking theory based on a neo-rational mental principle obscure the basic empirical neuroscience that explains associative thinking. Previous advocates of associative thinking lacked the empirical neuroscience that now explains it; they also lacked an understanding of the motivation that directs our thinking process. Associative thinking may seem base and dehumanizing when considered in isolation but it is glorious how our natural motivation directs associative thinking towards rational cognition, consciousness and increasingly humanistic behavior. The thinking nervous tissue of the cerebral cortex is directed by the motivating nervous tissue of the limbic system (as described in the following chapter). Natural Psychology identifies the binary neuroscience of motivated-thinking that explains human psychology; the process of motivated thinking becomes individualized at the quantum level. This elegant, parsimonious theory is based on basic empirical neuroscience and logical deductions from basic science principles.

III

Motivation Theory

Human psychology is understandable in terms of binary neuroscience; nervous tissue structured for motivation (the limbic system) directs nervous tissue structured for thinking (the cerebral cortex). It is critical to separate motivation theory from thinking theory (how associative thinking produces rational consciousness) to understand behavior and the mental process. *Our natural motivation neurophysiology seeks the electrical brain energy of life; this is true biological theory at the cellular level. Consistently, our natural motivation directs the thinking process to seek the most electrical brain energy produced by the strongest associative thought. Since lived experiences associated with neurophysiological energy are experiences of well-being, behavior is naturally motivated to seek well-being. The human motivation for behavior to seek well-being is a widely accepted natural science motivation* (Myers, 1992, pp. 120-121, 409; Bernstein, 2006, p. SIG-17; Wade, 2006, pp. 445-448; Passer, 2009, pp. 502-505). It is unfortunate that our accepted natural science motivation to seek well-being is misunderstood by current attempts to adapt it to a neo-rational mental principle. The motivation for behavior to seek well-being is also supported by the World Health Organization that defines “mental health” as emotional well-being (World Health Organization, 2005, p.2). *Moreover, the motivation for behavior to seek well-being is a breakthrough understanding of evolutionary theory; our natural motivation to seek well-being generally directs behavior towards species survival.* A strong confirmation bias (the experimenter expectancy effect) for a neo-rational mental principle hinders our understanding of motivation theory as well as thinking theory. Natural Psychology explains our natural motivation with the basic empirical neuroscience of the limbic system and basic empirical behavior science; it also explains related emotions. Although seeking well-being may produce some repugnant behaviors, human nature is glorious in totality. The process is individualized at the quantum level while our common humanity majestically produces increasing altruism in an increasingly humanistic world.

Motivation seeks the strongest flow of neural energy through the cerebral cortex; the strongest pattern of neural communication produces the strongest associative thought and the most brain energy. Biological motivation seeks the greatest electrical brain energy of life from the strongest associative thought from the previous thought and from sensory stimuli. Although the cerebral cortex is constantly bombarded with stimuli from the senses, seeking the strongest associative thought fosters a patterned flow of selective attention. Unless a train of thought is distracted by significant sensory input, consecutive associative thoughts share substantial

common neuron firings. Long-term potentiation (the propensity of a fired neuron to fire again more easily) fosters a coherent train of thought. The mental process is naturally motivated to seek the energy of the strongest associative thought.

The motivation for the mental process to seek the energy of the strongest associative thought explains the motivation for behavior to seek well-being. Behavior seeks well-being based on learning from lived experiences associated with neurophysiological energy. During infancy, neurophysiological energy is predominately produced by satisfying basic physiological needs for physical survival and related health. During this period, physiological energy is produced by experiences related to nourishment, hydration and rest that generally provide an optimum balance of vitamins and minerals in blood feeding the brain. Infant experiences associated with neurophysiological energy are learned as desirable experiences. Formative experiences associated with neurophysiological energy teach us the desirability of a friendly environment; this typically includes experiences of comforting human contact, affection and social support. Infant experiences associated with physiological energy are experiences of well-being; as the brain develops over time and learns from experience, it seeks well-being as an infant seeks physiological health. Conversely, infant experiences associated with physiological deficits (experiences of poor nourishment, poor hydration, fatigue and physical sickness) are learned as undesirable. Formative experiences associated with physiological deficits teach us the undesirability of a hostile environment; this typically includes experiences of loneliness, abandonment and social rejection. Infant experiences associated with physiological deficits are experiences of a lack of well-being. As the brain develops over time and learns from experience, it avoids emotional distress as an infant avoids physiological deficits. Humans seek well-being based on its association with physiological energy during formative years and avoid distress based on its association with physiological deficits. Our natural motivation directs the mental process to seek the strongest associative thought and directs behavior to seek well-being.

Consistent with our understanding of all other organs, our natural motivation for behavior and the mental process is explained by tissue neurophysiology. The nervous tissue of the limbic system (the interior of the forebrain) is the anatomy of motivation and its function is motivation neurophysiology. The role of the limbic system in human motivation is generally accepted neuroscience but theorists erroneously attempt to adapt it to a complex, neo-rational mental principle. The limbic system is comprised of two dead-end structures of nervous tissues with two different functions. First, the dead-end structure of the thalamus and the hypothalamus manage the endocrine system that motivates behavior. The endocrine system motivates behavior with hormones as well as directing human development with hormones. The endocrine system

rewards behaviors and experiences of well-being with hormones like endorphins that the brain senses as attractive. The endocrine system also motivates behavior to avoid distress (for species survival) with stress hormones like epinephrine that the brain senses as aversive. Second, the dead-end structures of the hippocampus and amygdala (shaped like a ram's horns) stagnate the flow of neural communication and thus make them especially sensitive to the neurophysiological energy of this nervous tissue. The hippocampus and amygdala sense the cumulative neurophysiological energy of their neurons and seek the greatest neurophysiological energy of life.

Consistent with physiology theory, neurophysiological motivation at the tissue level is explained by the cumulative effect of neurophysiological motivation at the cellular level- the cumulative effect of neuron cell motivation. The motivation for the hippocampus and amygdala to seek the greatest energy of life is explained by the cumulative effect of the neuron cell motivation to seek energy (and avoid a lack of energy). Cellular motivation is explained by the unique ability of the neuron cell to sense its physical condition and to seek cellular energy and health. It is widely accepted that neuron cells are motivated to seek homeostasis- a resting potential; homeostasis is a balanced, healthy state that avoids physical deficiencies. But if neuron cells only sought homeostasis, humans would seek sleep and comas rather than life; neuron cells also seek the energy of the electrical spark of life- an action potential. Neuron cells seek the energy of an action potential as well as the energy and health of a resting potential. The stagnated flow of neural communication through the hippocampus and amygdala accentuates the cumulative effect of neuron cells seeking the physical energy of life. The neuron cell motivation to seek physical energy explains the motivation of the nervous tissue of limbic system to seek neurophysiological energy.

Besides empirical neurophysiology explaining motivation theory, behavior science demonstrates the motivation for behavior to seek well-being; seeking well-being is the motivation for all conditioned. Classical conditioning demonstrates behavior seeking well-being with controlled motivations that are common to humans while operant conditioning demonstrates behavior seeking well-being with controlled motivations tailored to individuals. Unconditioned stimuli that are described as natural motivations direct subjects to seek well-being and avoid a lack of well-being. Consistently, an experience that promotes well-being is described as a positive reinforcer and an experience that promotes distress is described as a punishment. Since behavior seeks well-being, an external reward ceases to have the desired affect when it causes a feeling of being manipulated- distress. Although behaviorism has become extremely complex consistent with cultural expectations, all conditioning proves the motivation to seek well-being.

The motivation for behavior to seek well-being is not only explained by empirical neuroscience and proven by empirical behavior science, it also explains evolutionary theory. Our natural motivation to seek well-being explains the motivation to seek species survival. Seeking well-being predominately motivates behavior to seek the requisites for species survival: individual survival past puberty, engaging in reproductive sexual behavior and promoting the lives of offsprings. Similarly, the current evolutionary psychology investigations of social reasoning, probability reasoning, risk assessment, principles of generalization, attitudes about violence, attitudes about parenting decisions, and reasoning about groups are all explained by the underlying motivation to seek well-being. The motivation to seek well-being and avoid a lack of well-being is a sensing process; extremes of both motivate behavior towards species survival. Emotional well-being and emotional pain have evolved as natural motivators for behavior; intense emotional pain is a strong motivator. Although the motivation to seek well-being can unfortunately compromise individual physical health and even physical survival, it fosters our evolutionary goal of seeking species survival. Since our natural motivation to seek well-being is a function of individual experience as described in the following chapter, it is extremely adaptive to environmental change. Although seeking well-being produces many repulsive behaviors, human nature is glorious in totality. Our common humanity is majestic in producing an increasingly altruistic world while seeking well-being.

Behavior is motivated to seek well-being and avoid a lack of well-being; emotions are the physical sensations of achieving or failing to achieve our natural motivation. Nervous tissue is sensing tissue consistent with neuron cells being sensing cells. The limbic system senses experiences associated with well-being as physically attractive because they are associated with increased neurophysiological energy. Conversely, the limbic system senses distressful experiences as aversive because they are associated with painful neurophysiological deficits. Hence there are two kinds of emotions: positive emotions of well-being and negative emotions of distress- a lack of well-being. Positive emotions are the physical sensing of well-being and negative emotions are the physical sensing of emotional distress. Broadly construed, most popular theories about emotions are consistent with the proposed theory of emotions expressing well-being or distress- a lack of well-being. Popular motivation theories of instinct theory, drive reduction theory, arousal theory, and incentive theory combine biological, emotional and cognitive factors in various ways. The fact that none of these motivation theories are comprehensive should discount the importance of each. The drive reduction theory has the most truth since it is based on a “biological requirement for well-being” (Bernstein, 2006, p. 401). The Cannon-Bard theory of emotions supports the motivation of seeking well-being while focusing on the activation

of the endocrine system. There is also some truth to the somatic theory of emotions whereby physical responses foster associated emotions; this is consistent with associative thinking. Most popular motivation theories correctly describe different aspects of the proposed unified motivation theory, but they erroneously seek to adapt their theories to cultural expectations for a complex, neo-rational mental principle. Abraham Maslow proposes a classic motivation theory of seeking self-actualization but this is a western motivation that excludes the eastern motivation of collectivism. Seeking well-being is a more fundamental motivation theory for behavior; it is inclusive of both eastern and western cultures. In contrast to current theories about motivation and emotions, Natural Psychology is a comprehensive, structural and function theory explained by empirical neuroscience.

Human psychology is understandable with simple binary neuroscience; the motivating nervous tissue of the limbic system directs the thinking nervous tissue of the cerebral cortex. The mental process is motivated to seek the energy of the strongest associative thought; behavior is motivated to seek well-being based on learning from the predominance of lived experience. Human motivation is explained by basic empirical neuroscience that is observable and verifiable; individual motivations vary slightly based on an individual spirit at the quantum level. An abstract philosophy of mind is extraneous to understanding motivation. The motivation to seek well-being may seem dehumanizing based on cultural expectations but it is glorious how this natural motivation directs associative thinking towards rational cognition, consciousness and increasingly altruistic behavior. The neuroscience of motivation is described in more detail in Appendix E.

IV

Motivated-Thinking and the Function of Experience

Natural Psychology explains behavior and the mental process with binary neuroscience; substantially common motivation neurophysiology directs substantially common thinking neurophysiology as a function of singular personal experience. The cerebral cortex is nervous tissue structured for thinking while the limbic system is nervous tissue structured to motivate thinking. Thinking neurophysiology is the general flow of neural communication through the nervous tissue of the cerebral cortex; thinking neurophysiology creates associative thinking that typically produces rational consciousness. Motivation neurophysiology is the flow of neural communication into the dead-end structures of the nervous tissue of the hippocampus and amygdala of the limbic system. Our motivation neurophysiology senses neurophysiological energy (health) of the brain and seeks the greatest electrical brain energy of life- the energy of the strongest associative thought. Since experiences associated with physiological energy during formative years are generally experiences of well-being, they are learned as desirable. All behavior is understandable as seeking well-being based on associative thinking as a function unique experience; unfortunately, we currently have little understanding of the experiences of others. This new paradigm is based on substantially unique experiences affecting substantially common neurophysiology in contrast to the popular paradigm based on substantially common experiences affecting substantially unique neurophysiology. Natural Psychology contends that substantially common neurophysiology creates a blank slate (tabula rasa) for learning from experience. Although Pinker is famous for challenging the blank slate theory, he fails to consider common neurophysiology when he concedes that something in the "mind" must be innate (Pinker, 2002, p. 34). The current psychology/psychiatry paradigm supports cultural expectations while contradicting the principles of four basic sciences (as described in Chapter One). It is unscientific to ignore biological reductionism (with a philosophy of mind), ignore the possibility of simple mental principles (advocated by eminent natural scientists), ignore tissue physiology (consistent with how physiologists explain all other organs), and ignore falsifiability (consistent with the philosophy of science requisite). In contrast, Natural Psychology is real science. Empirical neuroscience explains how the mental process seeks the strongest associative thought and behavior seeks well-being as a function of learning from individual experience.

Understanding human psychology as a function of lived experience affecting common neurophysiology will be difficult to accept for scholars who define themselves in terms of a unique

intellect. Difficulty understanding the wide range of personal experience also causes difficulty in understanding this comprehensive, parsimonious explanation of behavior and the mental process. Most people do not understand their own experiences and have significantly less understanding of the experiences of others. Even a brilliant psychiatrist like Oliver Sacks is unable to appreciate the distressful experience of living in a mental institution (Sacks, 1998). Current psychological theory erroneously uses the term *event* to describe a common experience; this may be useful in discussing a population but is misleading in understanding personal experience. Personal lived experience creates a unique perspective of any event; personal experience is singular. This thesis implores suspended disbelief in common neurophysiology to consider the intellectual rationality of logical deductions from empirical neuroscience (observable and verifiable). This chapter explains the central function of individual experience in affecting psychology; it disputes behavioral genetics and the pseudoscience that supports it.

Behavior seeks well-being through associative thinking based on experience; to the extent that we have common experiences, we have common behaviors. Common human experiences produce common behaviors that are erroneously described as innate instincts. Behaviors described as innate characteristics seek well-being based on learning from common experiences; this includes an interest in novelty, a desire to explore and manipulate objects, an impulse to play, and cognitive skills of interpreting gestures, identifying faces and acquiring language. Similarly, common cultural experiences produce common cultural behaviors that are different between cultures; they are documented by the sociocultural model of psychology (Ratner, 2002; Nisbett, 2003; Heine, 2007; Watters, 2010). Hence fundamental behavioral goals of individualism for western cultures and collectivism for eastern cultures are a function of cultural experience. Consistently, attachment theory and separation anxiety theory vary widely as a function of cultural experience. Moreover, the cultural nature of “culture-bound ‘syndromes’” described in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* describes behavior as a function of cultural experience (Bures, 2016). Furthermore, depression varies widely as a function of cultural experience from under 3% in some areas of Spain to 30% in some areas of Zimbabwe (Brown, 1996; Horwitz, 2002, p. 127; Watters, 2010). Suicide rates also vary widely as a function of social experiences (Durkheim, 1895). Besides common human and cultural experiences producing common behaviors, common family experiences often produce common behaviors that have been erroneously described as a product of family genes. Family pedigree studies correlate behaviors common to family members but erroneously discount the affect of formative learning from common family experiences.

The classical nature vs. nurture debate purports to investigate the function of genetics

(behavioral genetics) in producing individual behavior but there are many problems inherent in the framework of this debate. Cultural expectations for both genetic and environmental causation for behavior obscure the illogic of investigating influences that affect an *unknown* mental process. It is difficult to understand genetic influences that affect a *known* mental process; it is nearly impossible to understand the influences that affect an *unknown* mental process. Moreover, the category of nurturing experiences is hardly inclusive; parental nurturing is not the only experiences that affect well-being. Studies of abusive parenting, prison ward nurseries, and orphanages document the devastating effect of a lack of nurturing but these are not the only environmental experiences that produce mental distress. Besides nurturing experiences, experiences with siblings, friends, teachers and enemies affect well-being especially over time. Furthermore, nurturing experiences are extremely difficult to quantify; each child experiences the family nexus differently. It is impossible to describe environmental influences on psychology by focusing solely on nurturing experiences and it is impossible to quantify nurturing experiences. In contrast to the nurture position, the nature position purports to advocate for behavioral genetics. But the critical difference between the genetics of unique neurophysiology versus common neurophysiology is lost when the nature position can claim both positions. Moreover, behavioral genetics ignores the fundamental anomaly of schizophrenia; schizophrenia is generally considered a genetic dysfunction but it does not breed true (Ross, 1995; Andreasen, 2000). People with schizophrenia have a twenty percent reproduction rate compared to the general population; this should translate into elimination of schizophrenia after several generations. Furthermore, proposing multiple genes influencing an unknown mental process makes it impossible to falsify the theory. Lastly, it is impossible to disentangle the difference between family and genetic influences (Glatt, 2008). Cultural expectations for behavior based on both genetic and environmental causation foster a confirmation bias that supports behavioral genetics as well as cultural psychology.

Linkage studies and twin studies are the main support for the behavioral genetics and the nature position but they are similarly based on a strong confirmation bias and poor scientific methodology. Linkage studies that attempt to link specific genes to specific behaviors regularly make the news because people seek support for their beliefs; in contrast, the failure to replicate these studies is rarely editorialized (Kirk, 2013, p.307; Boekel, 2014; Joseph, 2014; Aarts, 2015; Insel, 2015; Joseph, 2015). Society welcomes investigations that link specific genes with specific behaviors without expecting the standard scientific methodology of broad samplings and replicating studies. For example, the *New York Times* reported different studies describing different genes causing schizophrenia in 1988, 1997, 2002, 2006, and 2008; but failed to

editorialize their contradictions and their failure to replicate (Joseph, 2013b). The failure to replicate studies that support behavioral genetics is a disparaging problem for many eminent geneticists (Risch, 2000; Kendler, 2005; Faraone, 2008). There are strong scientific challenges to a genetic causation for schizophrenia disorder (Joseph, 2004; Joseph, 2006, Leo, 2016); to IQ and crime (Joseph, 2004); and to autistic disorder, attention deficit hyperactivity disorder, and bipolar disorder (Joseph, 2006). Moreover, linkage studies fail to acknowledge and consider the gender based nature of most mental distress (Horwitz, 2002, p. 173). Some geneticists further contend that the nature of genetics precludes the ability to link genes to behavior (Ruth Hubbard, 2010). The failings of linkage studies and behavioral genetics are well documented (Szasz, 1960; Breggin, 1991, Ch. 5 & Ch. 7; Gould, 1996; Lewontin, 1998; Joseph, 2004; Ratner, 2004; Joseph, 2006; Carlat, 2010; Joseph, 2010a; Joseph, 2010b; Joseph, 2011; Palmer, 2011; Joseph, 2012; Joseph, 2013a; Joseph, 2014; Panofsky, 2014; Leo, 2016). But critics of behavioral genetics fail to address its most critical scientific anomaly; genetics are far too complex to describe the function of any organ. Only a reverence for neural complexity promotes the consideration of behavioral genetics; investigating the function of any other organ based on genetic research would be considered absurd- difficult beyond consideration. Only a reverence for neural complexity and a strong confirmation bias could support claims of genetic causation for specific behaviors like breakfast eating patterns (Keski-Rahkonen, 2004), perfectionism (Tozzi, 2004), coffee and tea preferences (Luciano, 2005), loneliness (Boomsma, 2005; Bartels, 2008), and political choices (Spector, 2015).

Twin studies also support behavioral genetics based on a strong confirmation bias and poor scientific methodology. Twin studies typically focus on the difference between the behavior of identical twins (with similar genes) and fraternal twins (with different genes) while assuming similar experiences- similar environments. The equal environment assumption (EEA) asserts that both identical twins and fraternal twins experience equal environments but this is ridiculous. Most importantly, it is naïve to believe that the relationship *between* identical twins and fraternal twins is not significantly different and does not create a significantly different environment. In reality, twins are a major influence on each other; identical twins typically expect and seek common behaviors while fraternal twins typically expect and seek different behaviors. The failings of the EEA are well documented (Ross, 1995, p. 89; Pam, 1996; Joseph, 1998; Joseph, 2006, pp. 28-34; Ross, 2008, p. 126; Joseph, 2014). Besides the erroneous EEA, a cultural fascination with coincidences among identical twins makes them immune to scientific methodology (Nairne, 2003, p. 23; Passer, 2009). Twin studies often support cultural expectations with open-ended searches for coincidental similarities from small samples; this ignores the basic scientific methodology of

stating a hypothesis in advance and thereafter testing and verifying it. Moreover, scientists generally consider case studies to be the weakest type of scientific research except with identical twins where fascinating coincidences are embraced as legitimate support for behavioral genetics (Peter Watson, 1981).

Twin studies of identical twins reared apart are the hallmark of twin studies and support for behavioral genetics but these studies are plagued by a confirmation bias and poor methodology. Identical twins reared apart exemplify environmental influences on common brain biology but “the devil is in the details” of established research. Studies of reared apart identical twins lack the standard science methodology of acceptable sample sizes, random recruitment, double-blinded studies and especially transparency. Identical twin studies also fail to adjust for common experiences from a common appearance, common age, and common sex (Farber, 1981). The failings of studies of identical twins reared apart are well documented (Joseph, 2004; Joseph, 2014; Joseph, 2015b).

The most famous identical twin study that purports scientific support for behavioral genetics is the Minnesota Study of Twins Reared Apart (Bouchard, 1990). A newspaper article instigated this research (Myers, 1992); the story describes an amazing list of coincidences in the lives of reunited identical twins (the Jim Twins). Bouchard used the publicity of the Jim Twins as a springboard to investigate the link between genes and behavior with a bias that borders on fraud. In contrast to the common perception, the twins in his study were not separated at birth and were not reunited by the study. As documented and thereafter discounted in the study, twins frequently lived together for years before their separation and typically lived together for years after their separation and before the research (Bouchard, 1990, pp. 224-227). Some twins also had substantial frequent contact with each other while being reared apart. It is unscientific for Bouchard to limit access to his methodology since his complex research extended over two decades; small errors can easily be compounded over time. This research also over-quantifies its data; a statistical mean becomes meaningless when the sampling size drops below five dozen. Furthermore, it is unscientific for Bouchard to omit numerous pairs of twins from the study sampling without explaining the reason. Some claim that the study researched 137 sets of twins (Caplan, 2012), the study introduces a sampling of over 100 sets of twins (Bouchard, 1990, p. 223), then describes the sampling as 56 sets of identical twins (Bouchard, 1990, p. 223), and thereafter provides data for only 48 sets of identical twins (Bouchard, 1990, p. 226). Bouchard's exposes his blatant confirmation bias with concluding statements to the study about his place in history (Bouchard, 1990, pp. 227-228).

A Danish-American adoption study of schizophrenia is a second classic study that

supports behavioral genetics with pseudoscience. Seymour Kety and his colleagues located biological parents of adopted children with schizophrenia to correlate rates of “mental disorders.” In contrast to its claims, this study shows no biological connection between behavior and genetics- no increase in rates of schizophrenia in close family members. The conclusion supports a biological link based on half-siblings on one side of the family- on an absurd manipulation of data from a small sampling. Only an unusually strong confirmation bias for behavioral genetics could consider such weak, contorted data as scientific support. There have been numerous criticisms of the scientific failings of this frequently quoted study (Benjamin, 1976; Lidz, 1983; Breggin, 1991, pp. 97-98; Pam, 1995; Joseph, 2001; Boyle, 2002; Joseph, 2014). Studies of identical twins reared apart have significant scientific failings obscured by a confirmation bias for behavioral genetics among both researchers and identical twins.

Besides the studies of identical twins reared apart, E. Fuller Torrey’s study of schizophrenia and bi-polar disorders is the most sighted pseudoscientific support for mental distress as a biological dysfunction (Torrey, 1994). This study argues that schizophrenia changes the structure and function of the brain, but the scientific methodology is poor and the hypothesis is subjectively interpreted. Researchers subjectively interpreted both the diagnoses of specific “mental disorders” and childhood recollections about physical illnesses and behaviors. Moreover, it is not a double-blind study. The summarizing narrative between a genetic, a virological, and a developmental perspective of the study data hardly qualifies for science. Torrey’s study is widely accepted as science based on a strong confirmation bias for behavioral genetics and self-promotion.

Natural Psychology challenges the pseudoscience of behavioral genetics with a comprehensive, parsimonious theory based on elementary neuroscience that is observable and verifiable. There are strong cultural expectations and vested interests that seek scientific support for behavioral genetics; it is unfortunate that genetic research does not adjust for this confirmation bias. Consistent with all other organs of the body, genetics affect physical attributes of human brains that work similarly with slight, insignificant differences due to heredity. Behavior is the natural outcome of common neurophysiology learning from unique experience and responding to unique experience; there are no genes for specific behaviors including behaviors that express mental distress. Behavioral genetics supports cultural expectations for a complex, nativist mental principle of neo-rationalism with a confirmation bias and poor scientific methodology; it is without structural and functional neuroscience support. In contrast to behavioral genetics and current behavioral neuroscience, Natural Psychology explains behavior with a radically different concept of binary neuroscience. Natural Psychology explains behavior with the elementary empirical

neuroscience of common motivation neurophysiology directing common thinking neurophysiology as a function of unique lived experience.

Natural Psychology challenges cultural expectations for a unique mental principle of neo-rationalism and cultural expectations about free will but this should not discount the value of its scientific truth. The unpredictability of quantum mechanics creates the independent spirit that makes the rational process of associative thinking unique to the individual. Society will redefine *intellect* to reflect scientific truth about our mental process and the diversity of the human experience. Society will also redefine *free will* to describe the human ability to affect behavior at the quantum level and by affecting experiences and the perception of those experiences. Our common humanity produces a natural trend towards increasingly intellectual and moral behavior; our species is producing increasing altruism (Pinker, 2011). Understanding our natural psychology and our common humanity will significantly increase the altruism and human civility in the world.

Natural Psychology is a comprehensive, parsimonious new paradigm of human psychology based on logical deductions from basic science principles and basic empirical neuroscience. It explains psychology with binary systems neuroscience consistent with how neuroscientists model the brain with computers that operate on a principle of binary science. Psychology is explained by our common motivation neurophysiology directing our common thinking neurophysiology as a function of lived experience. The nervous tissue of the limbic system is structured for motivating the nervous tissue of the cerebral cortex that is structured for thinking. Natural Psychology is an elegant, structural and functional explanation of thinking and motivation based on accepted tissue neurophysiology that is further explained by accepted cellular neurophysiology.

V

The New Paradigm of Natural Psychology

Basic empirical neuroscience and logical deductions explain human psychology and rational consciousness; the mental process seeks the strongest associative thought and behavior seeks well-being based on unique individual experience. Natural Psychology explains the binary neuroscience of common motivation neurophysiology directing common thinking neurophysiology as a function of learning from lived experience. Thinking and motivation are explained with empirical tissue neurophysiology that is further explained by empirical cellular neurophysiology. Consistent with the advocacy of Associationists who founded psychology, early behaviorists, classical British empiricists and ancient Greek philosophers, associative thinking produces rational consciousness and thinking that appears otherwise. Rational consciousness is based on associative thinking that is explained by the structure and function of the nervous tissue of the cerebral cortex; this nervous tissue is further explained by accepted cellular neuroscience. The motivation for associative thinking is explained by the structure and function of the nervous tissue of the limbic system; this nervous tissue is further explained by accepted cellular neuroscience. Our natural motivation directs the mental process to seek the energy of the strongest associative thought and directs behavior to seek well-being based on learning from experience. Psychology is learned from unique individual experience affecting common thinking and motivation neurophysiology. This binary theory is parsimonious and elegant; complex and abstract systems neuroscience, molecular neuroscience and a philosophy of mind are extraneous to explaining the brain and psychology. Natural Psychology is a comprehensive new paradigm of biological and physiological psychology based on elementary neuroscience that is observable and verifiable. While this is a more mechanistic foundation to free will than expected by the current paradigm, the brain makes trillions of choices at the quantum level that speaks to our individuality and unique spirit or soul.

With an understanding of associative thinking and the motivation that directs it, much of human psychology becomes logically obvious. Since fairness and altruism generally promote well-being, humans increasingly seek fairness and altruism. Since behavior seeks well-being based on experience, experiences common to humans, cultures and families foster behaviors common to humans, cultures and families respectively. Since behavior seeks well-being and communicating with others typically promotes social and physical well-being, humans generally seek language skills. Since behavior seeks well-being, humans typically want to be treated fairly

and avoid mistreatment by others. Since behavior is a product of associative thinking, behavior patterns are substantially habitual.

Natural Psychology is a unified paradigm of biological psychology, physiological psychology, sociobiology, evolutionary psychology, and a radically different theory of behavioral neuroscience. Since this thesis explains psychology with empirical neurobiology, it is a comprehensive theory of biological psychology. Since this thesis explains psychology with empirical neurophysiology, it is a comprehensive theory of physiological psychology. Since this thesis explains social behavior with empirical neurobiology, it is a comprehensive theory of sociobiology. In contrast to popular sociobiology theory that focuses on complex theoretical biology (E.O. Wilson, 1980; Machamer, 2001), this thesis is explained by empirical tissue and cellular neurobiology. Since this thesis explains how behavior promotes species survival (with broad adaptability), it is a comprehensive theory of evolutionary psychology. In contrast to popular evolutionary psychology theory that incorporates an abstract philosophy of mind, this thesis explains evolutionary theory with biological reductionism. Lastly, since this thesis explains behavior with empirical neuroscience, it is a radically different, comprehensive theory of behavioral neuroscience. Natural Psychology is a unified theory of biological psychology, physiological psychology, behavioral neuroscience, sociobiology and evolutionary psychology.

Schools of psychology gained popularity because they add valuable insights into behavior and the mental process; this new paradigm unifies the essence of structural psychology, functional psychology, biological psychology, behavioral psychology, evolutionary psychology, psychodynamic psychology, humanistic psychology, cognitive psychology, and sociocultural psychology. This thesis is structural psychology, but rather than investigating the complexity of sensory elements of consciousness, it identifies the empirical brain structures of thinking and motivation. The cerebral cortex is nervous tissue structured for thinking and the limbic system is nervous tissue structured for motivation. This thesis is functional psychology, but rather than investigating the adaptability of an abstract philosophy of mind, it explains how empirical neurobiology promotes species survival. Human psychology is extremely adaptive to environmental change since our common neurobiology functions based on environmental experience. This thesis is biological psychology, but rather than investigating obscure molecular neuroscience and abstract systems neuroscience, it explains psychology with simple tissue neurophysiology consistent with physiology theory. This thesis is behavioral psychology, but rather than contortions to adapt behavior science to a complex neo-rational mental principle, it explains all behavior as conditioned by associative thinking. This thesis is evolutionary psychology, but instead of theorizing about the adaptability of an abstract philosophy of mind, it

explains how motivation neurophysiology directs thinking neurophysiology towards species survival with broad adaptability. This thesis is psychodynamic psychology as far as advocating that traumatic experiences cause mental distress, that many traumatic experiences are unavailable for recall, and that the memory of many traumatic experiences can be retrieved through associations. States of consciousness and how traumatic experiences affect memory are discussed in the paragraphs about memory and states of consciousness in Appendix F. This thesis is humanistic psychology in explaining how our common humanity fosters humanism in an increasingly humanistic world. This thesis is cognitive psychology, but rather than investigating complex neo-rational information processing, it explains our simple mental process of motivated-thinking. Lastly, this thesis is sociocultural psychology, but rather than focusing solely on communal social experiences, it also explains the affect of cultural experiences on individuals. Natural Psychology is a unified theory of structural psychology, functional psychology, biological psychology, behavioral psychology, psychodynamic psychology, humanistic psychology, cognitive psychology, and sociocultural psychology.

Popular psychology theory is complex. Current theory is broadly based on an ambiguous process of rational thinking motivated by an ambiguous combination of virtue and self-interest based on an ambiguous combination of innate character and environmental factors. Popular theory is comprised of such a massive quantity of ambiguous, convoluted, and fragmented evidence that it is difficult to summarize. Popular theory is so complex and ambiguous that an overview varies widely between psychologists; it is therefore difficult to challenge and refute. The general biopsychosocial model of psychology combines biological, psychological and social perspectives, but its biological perspective is only theoretical and its psychological perspective is philosophy rather than science. Popular theory focuses on details that differentiate individual behavior while this theory explains the meaning of common behavior patterns. Current theory is complex and has few limits to the acceptance of obscure details about an *unknown* mental process; parsimony (the most basic principle of science) is never mentioned.

Natural Psychology is a comprehensive, parsimonious theory of biological psychology based on binary (systems) neuroscience; it is elegant science. This brief explanation of psychology is supplemented by a unified explanation of popular psychology theories in Appendix F. The mental process seeks the strongest associative thought and behavior seeks well-being based on lived experience. This thesis may seem dehumanizing from the context of the current psychology/psychiatry paradigm but it is glorious in explaining our increasingly altruistic behavior and advanced mental acuity based on individuality at the quantum level. More importantly, this is critical theory for understanding mental distress and reducing emotional suffering; self-knowledge

will promote a significant improvement in the human social condition.

VI

Mental Distress

Mental distress is the normal neurobiology of distressful experiences (based on associative thinking); it is a social welfare problem rather than a “mental disorder.” Psychiatry and its medical model falsely claim biological reductionism but real biological reductionism explains mental distress as natural emotional suffering (and anti-social reactions to the suffering) from uniquely distressful experiences. *Behavior seeks well-being through associative thinking as a function of singular personal experience. The World Health Organization describes “mental health” as expressing emotional well-being* (World Health Organization, 2005, p. 2); conversely, *mental distress expresses painful emotional suffering and anti-social reactions to the suffering.* Rational consciousness produced by associative thinking (and quantum mechanics) changes everything. “Mental disorders” are not disorders of a neo-rational mental principle; they describe a social welfare problem based on associative thinking. An aversion to mental distress is learned during infancy through experiences associated with physiological deficits; experiences of loneliness, abandonment and social rejection are emotionally painful like physiological deficits. In contrast to psychiatry that describes mental distress as a biological dysfunction of a neo-rational mental process, mental distress is emotional distress based on associative thinking. The medical model of “mental disorders” denies the humanity of extreme emotional pain from extreme emotional suffering from extremely distressful experiences; it pathologizes emotional suffering (Lancet editorial staff, 2016). Emotional pain is perceived by the brain similar to physical pain; unfortunately, it recedes far more slowly. Emotional pain can be excruciating and prolong; severe emotional pain can last months, years or decades depending on the continuing distressfulness of the experiences. Mental distress is a social welfare problem of emotional suffering from distressful experiences; mental distress is understandable as expressing emotional pain or (typically subconscious) strategies intended to reduce the pain. Broadly construed, the two main strategies for reducing the pain of emotional suffering are depression (slowing the painful mental process) and compulsive behaviors (defined as antisocial or counterproductive behaviors associated with emotional well-being from unique personal experience). Natural Psychology is a comprehensive, parsimonious explanation of mental distress- emotional suffering and anti-social reactions to the suffering.

This thesis uses the terms *mental distress* and *emotional distress* to describe what is more generally, erroneously described as a *mental disorder*, *psychological disorder*, *mental*

illness, mental disease, madness, insanity, and abnormal psychology. Consistently, *maladaptive behavior* may be maladaptive for the survival of the individual but not for the survival of the species. The terms *mental distress* and *emotional distress* should not imply that the problem is any less painful or problematic than more popular medical terminology. Although emotional distress is technically more accurate than mental distress, mental distress currently has connotations that better address the painfulness of the problem.

Popular theory about mental distress is based on its painful irrationality but this central theme is not identified because it is indefensible. Antisocial or undesirable irrationality is basic to the description of mental distress regardless of significant irrationality being accepted neo-rationalism. Irrational thoughts and behaviors are a widely accepted part of prosocial neo-rationalism while it is one of the defining features anti-social thoughts and behaviors. The focus on elements of emotional suffering deemed irrational legitimizes the erroneous belief that mental distress is a disorder of an unknown biological process. This is a logical deduction from a false premise. The medical model falsely implies that extremely distressful experiences are an intellectual problem rather than a social welfare problem. The medical model denies that extremely distressful experiences naturally cause extremely painful emotional suffering pain over extended periods. Human emotions are real; they are feelings of happiness or sadness in response to happy or sad experiences. Erroneous concepts of mental disorders and mental illness are based on erroneous concepts about a mental principle of neo-rationalism and denial of human emotions. Unfortunately, assuming that mental distress is a biological failing legitimizes the harmful medical perspective of social problems; our culture seeks medical solutions to biological failings.

It is a significant anomaly of popular psychology and psychiatry theory that mental distress is described as a pathological dysfunction of a normal mental process without describing a normal mental process. Popular theory about mental distress is based on the vulnerability-stress model (the diathesis-stress model). The vulnerability-stress model contends that mental distress is based on a predisposition to have psychological problems that is activated by stressors in the environment. The vulnerability-stress model supports the commonly accepted compromise in the nature vs. nurture debate. The vulnerability-stress model supports cultural leaders and their self-serving belief that their achievements are based on nativist neurophysiology, but their biological uniqueness lacks structural and functional neuroscience support. Psychiatry and the DSM support the cultural expectation advocated by cultural leaders that mental distress is a dysfunction of a rational mental principle without stating this premise. Psychiatry falsely claims biological reductionism while: 1) advocating an abstract philosophy of mind in contrast to biology

and biological reductionism, 2) failing to consider simple mental principles consistent with natural science theory, 3) failing to focus on tissue neurophysiology consistent with physiology theory, and 4) lacking falsifiability consistent with the philosophy of science requisite.

It is unfortunate for emotional sufferers that popular theory focuses on the irrationality of mental distress while its painfulness is misinterpreted and vastly unappreciated. Emotions are real responses to happy and sad experiences; sad experiences cause negative emotions that are directly related to the degree of distressfulness of the experiences. Emotional distress and physical pain are experienced similarly; they are both associations of physiological deficits. Emotional pain is sensed similarly to physical pain except that emotional pain is without an identifiable source. Pain is currently identified with a specific source but the pain of emotional distress is more general and without an easily identifiable source. The painfulness of severe emotional distress can be constant, commanding and excruciating similar to physical torture. Hence, it is illogical to criticize sufferers of emotional pain for failing to stay focused on mundane conversations and failing to enjoy activities that previously gave them pleasure. It is unfortunate that suicide is occasionally perceived as an attractive option for ending excruciating emotional pain when other options for relief seem hopeless.

Natural Psychology is a unified explanation of mental distress as a social welfare problem. Broadly construed, anxiety is the mentally painful sensation of negative emotions- emotional distress. Negative emotions of distress produce painful anxiety that naturally motivates behavior to seek well-being- to reduce the pain. Broadly construed, the two main strategies for reducing the pain of emotional distress are depression and compulsions. Depression is a common (generally subconscious) strategy for reducing the pain of emotional distress when solutions seem distant or hopeless. Depression reduces painful anxiety by slowing painful thoughts when solutions seem distant or hopeless. Broadly construed, depression and/or anxiety are fundamental to all mental distress; consistently, anxiety and depression are the two most common psychological complaints (Wade, 2006, p. 566; Passer, 2009, p. 556) and often occur simultaneously (Kendell, 1974; Breier, 1985; Tyrer, 1985; Stavrakaki, 1986; Zimmerman, 2000). Depression describes a broad range of hopelessness from a common reaction to minor social problems to the depression expressed in catatonic schizophrenia. Broadly construed, compulsions are antisocial or counterproductive behaviors that seek relief from painful emotional distress with behaviors *associated* with well-being from unique individual experience (Ross, 2007, 210-211). Compulsions describe a wide range of behaviors from mildly undesirable behaviors to the criminal behavior of psychopaths. It is difficult to understand how compulsive behaviors like self-inflicted injury can be associated with well-being because it is difficult to understand the wide

range of personal experiences.

Human experience with natural catastrophes (“post-traumatic stress disorder”) and human cruelty (QB VII, 1974) documents mental distress as a function of experience. Although mental distress is typically learned from a history of painful experiences, an experience can be so traumatic that it causes lasting emotional distress. The DSM has categories like *adjustment disorder* and *post-traumatic stress disorder* that describe mental distress as a direct function of experience but simultaneously attributes causation to biological failings. Popular theory describes mental distress as disproportionate to stressful “events” while defining an event as a common experience but individuals have a unique perspective of all events. Mental distress is not disproportionate to lived experience (Wakefield, 1992; Horwitz, 2002, p. 158). It can be difficult to understand personal experience and infinity more difficult to understand the experiences of others. Current psychology and psychiatry theory fails to appreciate the stress of many personal histories and social environments (Horwitz, 2002, p. 159).

It is unfortunate that common reactions to distressful experiences often cause a slow downward spiral of distressful experiences. Emotional pain from distressful experiences is often a distraction from behaviors and experiences that promote emotional well-being and thus fosters additional social problems (additional emotional distress). Feelings about a social “pecking order” tend to reinforce defensive behaviors that exasperate problems and create a course of distressful experiences. Moreover, distressful experiences often promote self-criticism and a lack of self-confidence that cause more social problems and additional emotional distress. Furthermore, emotional suffering can cause related physical problems especially with sleep that exasperate emotional distress.

Mental distress is the natural neurobiology of distressful experiences as explained by elementary empirical neuroscience; consistently, the medical model of “mental disorders” is fallacious. The popular medical model falsely purports biological reductionism based on: 1) the legitimacy and status of psychiatry as a medical science, 2) symptoms of emotional suffering and anti-social reactions to the suffering described in the *Diagnostic and Statistical Manual of Mental Disorders*, 3) medical sounding labels for symptoms of emotional suffering and anti-social reactions to the suffering, 4) hypothetical constructs from behavioral genetics and current behavioral neuroscience, and 5) widely disproved correlations between chemical imbalances and mental distress (and brain volume and mental distress). A strong confirmation bias fosters daily scientific studies that support the status quo but cannot provide structural and functional neuroscience support for the medical model. The chemical imbalance theory of mental distress remains popular because it is consistent with popular theory but it has been roundly rejected even

by eminent psychiatrists like Ronald Pies, editor-in-chief emeritus of the *Psychiatric Times* (Ross, 1995; Hyman, 1996; Valenstein, 1998; Hales, 2002; Whitaker, 2002; Lacasse, 2005; Double, 2006; Moncrieff, 2008; Kirsch, 2008; Turner, 2008; Bentall, 2009; Deacon, 2009; Kirsch, 2010; Carlat, 2010; Watters, 2010, pp. 234-240; Whitaker, 2010; Pies, 2011; Leo, 2012; Stamatakis, 2013; Turner, 2013; Moncrieff, 2014; Lynch, 2015; Sidley, 2015). Moreover, the claim that mental distress is caused by a chemical imbalance is based on a theorized correlation while accepted science logic dictates that correlations do not prove causation (Myers, 1992, pp. 11-12; Gould, 1996, pp. 269-273; Nairne, 2003, p. 72; Wade, 2006, p.49; Passer, 2009). Psychiatry also theorized that a reduction of brain volume caused “abnormal” psychology but correlation does not prove causation. Long-term neuroleptic drug use reduces the activity in areas of the brain and causes reduced volume from atrophy but mental distress is not a biological dysfunction. Popular psychiatry theories of chemical imbalances and loss of brain volume support cultural expectations but they are not supported by biological reductionism. The medical model of mental distress claims biological reductionism but is not a functional and structural theory based on empirical neuroscience. Attempting to pathologize mental distress has fostered many criticisms of popular psychology theory that are briefly summarized in Appendix G.

It is unfortunate for community “mental health” (again, the term *mental health* is used in a social welfare context rather than a medical context) that the erroneous medical model of mental distress is supported by substantial vested interests. The vested interest of psychiatry as a medical science promotes the medical model of mental distress; medical sciences seek medical solutions to problems. It is lamentable that psychiatry purports biological reductionism and thus is held in high esteem by other mental health professions. Similarly, the vested interests of the pharmaceutical industry vigorously support the medical model; its enormous financial interests exude a powerful albeit often subtle influence (Mosher, 1993; Mosher, 1998; Healy, 2000; Angell, 2004; Sharfstein, 2005; Ross, 2008, pp. 142-144; Virapen, 2010; Watters, 2010, pp. 223-242 & pp. 187-18; Gotzsche, 2013; Greenberg, 2013; Kirk, 2013; Whitaker, 2015; Taylor, 2016). The vested interests of academics and psychiatrists compensated by the pharmaceutical industry to conduct research and market pharmaceuticals similarly support the medical model; it is naive to believe in their impartiality. It is unscientific that pharmaceutical trials are not transparent science; drug companies are not required to submit information about unsuccessful trials (Turner, 2013; Every-Palmer, 2014). Besides advocating that natural emotional suffering (and anti-social reactions to the suffering) is a medical problem solvable with their medications, the pharmaceutical industry also fosters an unattainable expectation of constant cheerfulness to promote sales. The pharmaceutical industry pushes a Brave New World expectation for

psychology; it is not natural or normal to be happy after sad experiences. Moreover, the vested interests of the insurance industry support the medical model; it erroneously believes that pharmaceutical therapy is least expensive. Furthermore, the vested interests of some parents of emotionally suffering children support the medical model to relieve guilt or criticism of parental shortcomings or abusive behaviors. Lastly, the vested interests of some emotional sufferers support the medical model as a defense against responsibility for antisocial behavior or a defense against accusations of character weakness (or sin).

It is unfortunate that the medical model dominates mental health care based on its false claim of biological reductionism because it generally worsens outcomes. First, it is harmful to emotional sufferers for the medical model to falsely convince the community that natural emotional suffering from distressful experiences is a mental disorder- a brain dysfunction. Consistently, it is harmful for the DSM to pathologize the refusal to accept an assigned diagnosis of a “mental disorder” as an additional “mental disorder”- anosognosia. Secondly, the medical model worsens outcomes for emotional sufferers by falsely stigmatizing sufferers as having a malfunctioning brain; this is our worse social stigma. This erroneous stigma causes increased problems with social relationships, employment, child custody, insurance premiums, and control of medical and legal matters. Thirdly, the medical model worsens outcomes by promoting long-term psychotropic drug use that causes distressful side effects, physical fatigue and a decrease in mental acuity. Physical side effects, physical fatigue and a decreased mental acuity reduce the ability to solve real problems that cause emotional suffering. Lastly, the medical model worsens outcomes by promoting coercion; incarceration in mental institutions, coerced medication and coerced shock treatments are extremely distressful experiences. Coercive mental health practices are terrifying and rightfully the subject of horror films; they are not therapeutic. The erroneous medical model harms mental health.

Natural Psychology explains mental distress as a social welfare problem (natural emotional suffering and anti-social reactions to the suffering) - the normal neurobiology of distressful experiences based on associative thinking. Mental distress is not a brain aberration or defect; it describes the emotional suffering of those in the community with the most distressful experiences. Continuing experiences of extreme emotional distress causes emotional pain that is excruciating similar to the experience of physical pain except that it is generally far more prolonged. Natural Psychology is a comprehensive theory of biological and physiological psychology based on elemental empirical neuroscience that is observable and verifiable. Symptoms of mental distress express the painful anxiety of emotional suffering or (typically subconscious) strategies intended to reduce the pain. Broadly construed, the two main strategies

for reducing the pain of emotional distress are depression (slowing the painful mental process) and compulsive behaviors (counterproductive or antisocial behaviors associated with well-being from unique individual experience). Erroneously pathologizing emotional suffering fosters many criticisms of the medical model; these criticisms are briefly summarized in Appendix G. Consistently, Appendix H is a brief, unified explanation of popular theories about “mental disorders” based on Natural Psychology. Understanding a problem is critically important for a solution; understanding mental distress as a social welfare problem of (natural emotional suffering and anti-social reactions to the suffering) is vitally important for improving individual and community mental health.

VII Mental Health Care

Natural Psychology explains mental distress as painful emotional suffering and anti-social reactions to the suffering; mental health improves by decreasing distressful experiences and increasing (socially acceptable) experiences of well-being (Seligman, 2000). Mental health is a social welfare problem rather than a medical problem. Consistent with the World Health Organization (World Health Organization, 2005, p. 22005, p. 2) and a social welfare perspective, good mental health is emotional well-being and poor mental health is a lack of well-being- mental distress. Mental distress is painful emotional suffering and anti-social reactions to the suffering based on associative thinking from uniquely distressful experiences. Promoting positive experiences of well-being (affirmation and emotional support) and avoiding distressful experiences (critical people and hostile environments) promotes therapeutic well-being. In contrast to erroneous theories about an insidious brain malfunction of a neo-rational mental principle, it is affirming and therapeutic to understand mental distress as a natural expression of distressful experiences. Furthermore, a cultural understanding of the painfulness of mental distress should be affirming for emotional sufferers. Empowerment and agency are vital for solving the real social problems that cause distressful experiences; families, friends and/or counselors can be therapeutic when providing empathetic support. Animal companions may also provide therapeutic natural affirmation. Although we cannot control all of our experiences, understanding mental distress as the normal biology of distressful experiences will revolutionize mental health care. Humans have intrinsic value and deserve emotional well-being.

Current mental health care practices are generally counterproductive when erroneously treating natural emotional suffering as a *mental disorder*- a medical problem. It harms emotional sufferers to advocate that their natural distress is instead a *mental disorder* caused by a brain malfunction. Moreover, it harms emotional sufferers to deny the reality of their distressful experiences and instead ostracize them with a mythical stigma- the most dreaded stigma of insanity. Furthermore, it harms emotional sufferers to advocate drug therapy for a social welfare problem; drug therapies address the symptoms of emotional suffering but are obstacles to solving causation. Lastly, and most importantly, it harms emotional sufferers to be treated with coercion; it is cruel to further traumatize emotional sufferers with coercion that substantially increases emotional suffering. Distressful social experiences cause mental distress, consistently, it is therapeutic to avoid hostile social environments and hostile people (including those that

masquerade as supportive). Emotional attachment to abusers is a problem for many sufferers; it is wrong to accept blame for situations beyond personal control especially during the innocence of childhood.

It is generally therapeutic to develop habits that neutralize personally distressful experiences and habits that promote experiences of personal well-being. Creating habits that counter personally distressful experiences promotes a therapeutic resolution to the source of emotional suffering. Neutralizing traumatic experiences often centers on preventing others from experiencing similar distress or comforting people who have experienced similar traumas. Thus a rape victim might consider advocating for offender prevention programs, campaigning for stronger laws against rape or volunteering at a rape hotline. Consistently, a victim of childhood abuse might consider advocating for parenting skills programs, campaigning for stronger laws against child abuse, or volunteering to be a Big Brother or Big Sister. Neutralizing guilt should center on helping people like those hurt by your transgression; guilt from misdeeds is reduced by actions that make a person deserving of forgiveness. Actions that neutralize negative experiences are therapeutic; in contrast, self-absorption with personal problems without taking action to counter them is rarely therapeutic (Littrell, 2013). Although behaviors that neutralize distressful experiences are critical for therapy, habits that promote therapeutic well-being are also valuable. Habits that promote well-being include charitable work, improving social skills, improving personal efficacy, fostering personal interests and creative arts and improving physical health. Since well-being and mental distress are functions of individual experience, mental health care must be tailored to the individual. It is also therapeutic to learn effective ways of dealing with conflict; improving social skills generally improves mental health. Health psychology is valuable for teaching better responses to stressors but should also emphasize the importance of reducing stressful environments. The affirmation of social support from friendship is generally therapeutic but can take time to develop (Horwitz, 2002); pets may also provide therapeutic affirmation.

Mental health improves with therapeutic experiences that reduce distress and promote well-being, and to a lesser extent with a better attitude about personal problems. There is therapeutic power in positive thinking- in looking to the bright side of life; there is also therapeutic value in forgiveness. Most therapies and self-help books are centered on the principle of positive thinking; most emotional sufferers know this but find it difficult based on their history of distressful experiences. Focusing on positive experiences promotes positive experiences; focusing on positive memories promotes positive memories. Positive thinking is the foundation of the placebo effect; the broad range and power of the placebo effect is understandable in terms of the power of positive thinking (Kirsch, 2010). The placebo effect is the basis for the substantial pseudoscience

that has supported a long history of abandoned therapies that are now considered absurd and abhorrent. Consistently, the placebo effect is also the basis for support for many current therapies that will be considered absurd in the future (Moncrieff, 2014). Popular theory narrowly defines placebos because it does not understand human motivation and because it narrowly defines most aspects of human psychology. While positive thinking fosters therapeutic well-being, unfortunately the reverse is also true; there is negative power in negative thinking. Negative thinking is the foundation of the “Nocebo” effect; negative thinking promotes a lack of well-being- distress (Greville-Harris, 2015). Working to resolve negative experiences is therapeutic but simply focusing on negative experiences and memories promotes negative experiences and memories. Besides the therapeutic value of positive thinking, there is therapeutic value in forgiveness (Toussaint, 2014) and an acceptance of events beyond our power to change. Forgiving the human frailty of those who have transgressed against us reduces the satisfaction for transgressors and the harmful impact of a transgression. Forgiving doesn’t mean forgetting; learn from painful experiences rather than wasting valuable time dwelling on past problems. Although positive thinking and forgiveness can be detrimental if they obscure potential problems, distressful experiences foster negative thinking and victimization that generally perpetuate mental distress.

Supportive therapists, counselors and friends can promote mental health when fostering empowerment and agency, assisting with understanding the cause of emotional suffering, and assisting with strategies for resolving emotional problems. Assistance with establishing behavioral goals and strategies to achieve the goals is especially valuable during depression when solutions appear distant or hopeless. A positive relationship between client and therapist is critical for promoting therapeutic well-being; this is generally considered more important than the therapist’s technique (Wampold, 2001; Goldsmith, 2015). Unfortunately, a positive relationship between a therapist and a client can be difficult within the context of the current psychology/psychiatry paradigm. It is difficult for a therapist to truly empathize with a client’s plight while erroneously believing that the problem is significantly medical rather than solely social. A client’s natural defensiveness from distressful experiences can also make a positive relationship with a therapist difficult. Emotional sufferers experiencing the misfortune of distressful experiences often have difficulty accepting advice from therapists who they perceive as simply lucky in experiencing good fortune. Nevertheless, emotional sufferers should accept only supportive therapists; they should not allow condescending, uncaring or otherwise poorly matched counselors to pass for acceptable mental health care. It is often problematic for mental health care that emotional distress fosters a lack of self-confidence for changing therapists when

they are not a good match. Peer support may assist self-advocacy that is critical for critical for mental health care. Peers within organizations like Mad in America, The National Empowerment Center, MindFreedom International, Alcoholics Anonyms and Emotions Anonymous as well as independent peer specialists may provide valuable empathy, support, insights and resources. Since an ounce of prevention is worth a pound of cure, the value of social welfare counseling will increase substantially with an understanding of mental distress as natural emotional suffering (and anti-social reactions to the suffering).

Mental health care in America and Europe is mired with 400 different psychotherapies (Comer, 2004, 114); understanding mental distress will provide a framework for evaluating their relative value. Popular therapies should be reevaluated according to their ability to promote a prosocial, therapeutic increase in emotional well-being. The value of a few of the most popular therapies are discussed in this chapter including humanistic therapies, cognitive therapies, behavior therapies (behavior conditioning and relaxation therapies), physical therapies, psychoanalytic therapies, existential (or theological) therapies, psychopharmaceutical therapy and electro-convulsive therapy (ECT). Since mental distress is emotional suffering (and anti-social reactions to the suffering) caused by distressful experiences, coerced “therapies” (including involuntary institutional confinement, forced ECT and forced drug therapies) are counterproductive.

For psychosis and intense mental distress, Open Dialogue therapy espoused by the mental health system of Western Lapland in Finland will become a valuable model for the future. Open Dialogue therapy is consistent with mental distress being a function of distressful experiences; it respectfully provides emotional support while promoting honesty about problems and options for solutions (Mackler, 2010; Lundblad-Edling, 2014). In Open Dialogue therapy, two or three mental health professionals from different fields visit a person suffering psychosis and openly investigate the distressful experiences that cause emotional suffering in search of solutions. Clients are treated with therapeutic affirmation that their emotional distress is caused by their distressful experiences and that they are best able to understand the cause and the solutions to their distress. Besides seeking to engage the client, opinions are also solicited from family and friends; therapists understand that they are only visitors in their clients' lives. A therapeutic strategy formulated and directed by sufferers is encouraged; this fosters agency and empowerment. Sleeping aids for mania are often prescribed for an initial five-day period but most drugs are avoided. The success of Open Dialogue therapy is staggering; it dwarfs the outcome for the medical model of biological psychiatry (Seikkula, 2006).

Humanistic therapies can be valuable since they focus on promoting the well-being of

empowerment, personal affirmation, self-acceptance and self-appreciation. The humanistic theme of self-determination is especially valuable in promoting agency and empowerment for the work of improving mental health. Unconditional love and positive regard typically foster emotional well-being and related mental health unless they promote unrealistic expectations and resulting distressful experiences. Although the humanistic definition of free will should become more consistent with the natural science of associative thinking, humans have the ability to affect their own happiness. Carl Rogers advocates valuable empathetic therapy but therapists cannot truly empathize with their clients while not understanding that their problems are based entirely on distressful experiences (Rogers, 1961). Ron Unger's empathetic therapy and Peter Breggin's empathetic therapy are also excellent in promoting supportive environments while addressing problematic thinking patterns (Breggin, 1991; Unger, 2011). Gestalt therapy fosters self-recognition and self-acceptance, but while role-playing therapies can be valuable, some confrontational techniques can be intimidating and thus counterproductive. Humanistic therapy is valuable when promoting truth about social relationships; understanding a problem promotes solutions. Family therapy is valuable when parents, siblings and offsprings improve their family experiences through better conflict resolution; couples therapy similarly improves conflict resolution between partners. Consistently, group therapy is productive when it reduces feelings of isolation, abandonment and social rejection that are associated with mental distress. However, group therapy for some antisocial behaviors may be counterproductive; society wants some behaviors to be associated with social rejection.

Cognitive therapy is valuable because it understands that people subjectively interpret events based on personal experience. There are two basic kinds of cognitive therapy approaches; the first approach addresses false assumptions that cause mental distress and the second is coping strategies. Cognitive therapy is valuable in addressing counterproductive thinking and behavior patterns. The cognitive triad rightfully addresses the problem of negative thinking; a negative perception of one's experiences, oneself and one's future promotes negative experiences. Consistently, Ellis's rational-emotive therapy is valuable in identifying and changing problematic thinking patterns that foster emotional distress. However, the occasionally abrasive rational-emotive style can foster distressful experiences and thereby be counterproductive. The second approach of cognitive therapy addresses coping strategies to defuse stressful situations and reduce mental distress. Cognitive therapy is valuable when promoting an understanding of experiences that trigger emotional suffering and promoting strategies that foster better outcomes. It is also valuable in teaching effective ways of dealing with conflict; improving social skills generally improves social experiences. Health psychology is also valuable for teaching better

responses to stressors but fails to emphasize the importance of reducing stressful environments. Cognitive therapy rightfully advocates reasonable expectations about mental dispositions; real life is not about a Brave New World of constant cheerfulness. Cognitive therapy has become the dominant form of psychotherapy after incorporating aspects of behavioral therapy into cognitive behavioral therapy (CBT). Cognitive behavioral therapies can be valuable tools for reducing emotional suffering and anti-social reactions to the suffering (Burns, 2008; Beck, 2011; Leahy, 2011). Mary Ellen Copeland's Wellness Recovery Action Plan (WRAP) is another good cognitive-behavioral program; it guides clients towards more positive experiences (especially clients who have experienced the mental health care system). The recent advocacy of mindfulness as a therapeutic tool and Mindfulness-Based Cognitive Therapy has surged as a therapeutic approach (Kuyken, 2015). Cognitive therapy has valuable elements that will increase dramatically when it understands perception as a function of associative thinking rather than a neo-rational mental principle.

Behavior therapy will substantially increase in value with an understanding of associative thinking and behavior conditioning theory. Creating habits that neutralize distressful experiences and habits that promote well-being will become central to mental health care. Behavior therapies of exposure therapy, systematic desensitization therapy and aversion therapy reduce phobias by flooding new associations of well-being (familiarity and harmlessness) to counter feared consequences. Thus the exposure therapy of confrontation and imagination (including virtual realities) associates comforting experiences with a phobia; it reduces the anxiety of phobias by adding associations of well-being. Systematic desensitization therapy is a similar process broken down into successive steps. Consistent with behavior therapy reducing phobias, it also reduces compulsive behaviors with aversion therapy; it associates undesirable experiences with unwanted behaviors. The operant conditioning of behavior modification can be valuable therapy in using positive and negative reinforcements tailored to individual needs. Behavior conditioning is valuable therapy but it currently lacks the intensity and longevity necessary to change most established behavior patterns. Compulsions are difficult to neutralize because they are based on strong associations with well-being. Behavioral conditioning will increase in value as a therapeutic tool when it is better understood; humans can condition their own therapeutic happiness.

Relaxation therapy is frequently included in psychology texts as the main method of stress reduction; since stress causes mental distress, stress reduction is therapeutic. Physical relaxation is an association of well-being; a person cannot be emotionally agitated while physically relaxed. Relaxation reduces the energy expended for muscular movement and

thereby increases neurophysiological energy levels; this increased neurological vitality is a therapeutic association of well-being. Increased neurophysiological energy during sleep is an association of well-being; increased well-being during sleep can be therapeutic in addressing problems that are often avoided during consciousness because of their painfulness. Dreams and dream analysis are relaxation therapy. Mainstream relaxation therapies include behavioral muscle relaxation (often with soothing music), guided imagery and slow, deep breathing. But there is a wide variety of relaxation therapies; established psychological theory narrowly defines relaxation therapy and thereby excludes many popular methods. Popular theory typically fails to include massages, saunas and sweat lodges, and spas and hot baths. Current theory is even more baffled by exotic forms of relaxation therapy including meditation, yoga, tai chi, acupuncture and hypnosis. Although there may be small differences in brain activity during different forms of relaxation therapy, the affect of relaxation on the brain is similar. Meditation is a learned technique of deep relaxation that fosters mental vitality and a more positive disposition. Yoga and tai chi are relaxation techniques that combine stretching and minor exercise. Acupuncture is relaxation therapy based on mechanically blocking the flow of neural information to the muscular system with needles. Hypnosis is relaxation therapy (often with a guide); an increased sense of well-being during hypnosis promotes acceptance of positive suggestions. Trust and acceptance are associations of well-being that increase during relaxation; critical disbelief and cynicism are associations of emotional suffering that decrease during relaxation. A hypnotist can use the increased sense of well-being to direct a client to explore experiences that are otherwise too painful to consider. Relaxation therapies are naturally effective in reducing emotional distress; they will become a more important therapeutic tool when they are better understood.

Physical therapy is valuable by promoting therapeutic well-being based on its association with physical health and physical experiences; this includes health therapies and sensory therapy. Improved physical health promotes improved mental health. Physical health and fitness foster physical energy and related associations of well-being; conversely, physical sickness and fatigue reduce energy and produce related associations of emotional distress. Hence, plenty of exercise, a nutritional diet of moderate size, good hydration, and plenty of rest are therapeutic. Positive sensory stimulation is also valuable; a pleasing personal environment, pleasant aromas and affirming music all have some therapeutic value.

Psychoanalytic therapy is valuable in identifying traumatic experiences unavailable for recall with tools based on associative thinking (regardless of its theorized world of an id, ego and superego). Art therapy, drama therapy and free-association therapy are valuable in using associative thinking to gain valuable insights into traumatic experiences. Projective tests like

Rorschach tests and thematic apperception tests also use associative thinking to gain insights into themes that underlie mental distress. Similarly, dream analysis has therapeutic value when exposing hidden fears and the latent content of nightmares through associated dream imagery. Psychoanalytic therapy can be valuable in identifying the cause of emotional suffering but is often less valuable in resolving the issues it exposes. Mental distress is generally alleviated by actions that neutralize the impact of distressful experiences; merely identifying them rarely creates therapeutic well-being.

Existential therapy and theology are therapeutic when promoting experiences of well-being. Existential therapy and theology address issues related to the meaning of life that will remain unresolved by psychology; they are not functions of science and cannot be refuted with science. It is therapeutic to seek spiritual serenity for acceptance of distressful experiences that cannot be changed. Existential therapy and theology can have therapeutic value that should not be discounted.

Psychopharmaceutical therapy may be valuable in temporarily reducing emotional suffering during times of crisis but long-term use is generally counterproductive. Psychiatric drugs provide sedative relief in times of emergencies; extreme emotional pain can be an obstacle to solving problems or attaining needed rest. Although psychotropic medications may initially reduce the symptoms of emotional suffering, they are problematic when erroneously considered a solution to the real problems that cause emotional suffering (and anti-social reactions to the suffering). Fatigue and diminished mental acuity from protracted use of psychotropic medications inhibit the ability to work through real problems. Moreover, drug therapies have negative side-effects; significant physical diseases often result from long-term use. Psychotropic medications may have short-term value but long-term psychopharmaceutical therapy is generally counterproductive.

Electro-convulsive therapy (ECT) temporarily reduces symptoms of mental distress with brain trauma but does not address underlying causes; moreover, the trauma of the procedure is counterproductive. The surge of electricity through the brain produces brain seizures (a myriad of electrical neuron firings) that temporarily reduce symptoms of emotional distress. ECT is a traumatic procedure with macabre connotations that causes neural damage and memory loss. Since mental distress is emotional suffering from distressful experiences, the extremely distressful experience of a coerced ECT is extremely counterproductive. The electrical surge from ECT is especially damaging to the glial cells that nourish and support nerve cells; damaging the flow of nourishment to nerve cells is illogical for therapy. Temporary relief from emotional suffering by inducing brain seizures is counterproductive and distracts from addressing the real

life social problems that cause emotional suffering.

Mental distress is entirely a function of distressful experiences; understanding mental distress promotes improved community mental health as well as improved individual mental health. For the community as well as for individuals, reducing distressful experiences and increasing prosocial experiences of well-being improve mental health. Community mental health improves with more supportive social structures, and environments that reflect our common humanity- our common neurophysiology. Community mental health improves with a more supportive, respectful, charitable social environment and with less rigid messages about social status. Increased fellowship and increased social justice improve community mental health. These cultural factors account for the wide difference of mental health problems between cultures (Jablensky, 2000; Read, 2004, p. 58; Sartorius, 2008). Community mental health improves with an understanding of mental distress that disputes the false stigma of an insidious brain disorder. Political justice between cultures is as important as justice within a culture; the mental health of indigenous people will improve with more justice and autonomy. Sociocultural psychology will provide valuable service to the community with its investigation of cultural practices that foster social well-being and related mental health.

Humans have intrinsic value and deserve emotional well-being. Understanding mental distress as the natural neurobiology of distressful experiences will promote a significant improvement in individual and community mental health care. It is counterproductive to erroneously advocate that natural emotional suffering (and anti-social reactions to the suffering) is caused by a malfunctioning brain, tag emotional sufferers with a false medical stigma, and treat emotional sufferers with coercion. Moreover, long-term psychotropic drug use is counterproductive when it causes distressful side-effects and causes fatigue and a reduced mental acuity that inhibits the ability to solve real problems. Understanding the natural psychology of mental distress will radically improve outcomes for emotional sufferers. Natural Psychology Therapy is a related mental health care program published online at NaturalPsychologyTherapy.org.

VIII

Conclusion

Natural Psychology explains human psychology with logical deductions from elemental science principles and from elemental empirical neuroscience; it is an elegant science theory. The mental process seeks the strongest associative thought and behavior seeks well-being as a function of unique personal experience. This new paradigm is true, parsimonious natural science; it is based on binary (systems) neuroscience that is explained by nervous tissue structured for motivation directing nervous tissue structured for thinking. Consistent with how physiology explains all other organs with simple tissue physiology, simple tissue neurophysiology explains the brain and psychology. The nervous tissue of the cerebral cortex (the exterior of the forebrain) is thinking neurophysiology; the general flow of neural communication through this nervous tissue explains associative thinking. The nervous tissue of the limbic system (the interior of the forebrain) is motivation neurophysiology; the stagnated flow of neural communication through this nervous tissue explains the motivation for behavior to seek well-being. Consistent with physiology theory, cellular neurophysiology explains the tissue neurophysiology of motivation and thinking. As true natural science theory, Natural Psychology explains evolutionary theory; seeking well-being based on lived experience promotes species survival with broad adaptability. The unpredictability of quantum mechanics creates the independent spirit that makes rational process of associative thinking unique to the individual. While this is a more mechanistic foundation to free will than expected by the current paradigm, the brain makes trillions of unique choices at the quantum level that promotes our individuality and unique spirit or soul.

This paradigm revives the storied intellectual advocacy of associative thinking for the foundation of rational consciousness. Associative thinking originated with Plato and Aristotle and was renewed by classical British Empiricists and advocated by Associationists who founded psychology with Rationalists. Thinking theory was the original debate in psychology because it is the most important debate; integrating the two original thinking theories of neo-rationalism and associative thinking explains psychology. Elemental empirical neurobiology now explains how associative thinking produces rational consciousness. The mental process seeks the greatest electrical brain energy of life; this is the strongest associative thought from the previous thought and from sensory stimuli. Since experiences of emotional well-being are learned associations of physiological energy based on the predominance of infant experiences, behavior seeks emotional

well-being. Basic accepted neuroscience now proves the accepted natural science motivation of seeking well-being. Consistent with the World Health Organization describing mental health as emotional well-being (World Health Organization, 2005, p.2), mental distress expresses emotional suffering and anti-social reactions to the suffering and anti-social reactions to the suffering. Mental distress is the natural neurobiology of distressful experiences. While elemental neuroscience now explains rational consciousness based on associative thinking and quantum mechanics, behavior conditioning proves associative thinking. Logical deductions from behavior conditioning proves associative thinking for the present tense as well as for learning and memory,

Mental distress is understandable as expressing a painful emotional suffering or (typically subconscious) strategies to reduce the pain. Broadly construed, the two main strategies for reducing emotional pain are depression (slowing the painful mental process) or with compulsive behaviors (antisocial or counterproductive behaviors associated with well-being from unique individual experience). Individual mental health improves by decreasing distressful experiences and increasing prosocial experiences of well-being; consistently, community mental health improves with social structures that foster well-being.

False concepts about “mental disorders” and “mental diseases” are logical deductions from false premises. Assuming that the mental process works on a neo-rational mental principle legitimizes the belief that painful mental distress is a biological failing. Consistently, assuming that mental distress is a biological failing legitimizes the harmful medical perspective of social problems; it is logical to seek medical solutions to biological failings. Again, this is a logical deduction from a false premise.

The medical model of mental distress is wrong; its pseudoscience is supported by anomalies of the principles of four basic sciences: biology, natural science, physiology and the philosophy of science. The current psychology and psychiatry paradigm erroneously: 1) advocates an abstract philosophy of mind in contrast to biology, 2) fails to consider simple principles of human nature consistent with natural science theory, 3) fails to consider tissue neurophysiology consistent with physiology theory, and 4) lacks falsifiability consistent with the philosophy of science requisite. In contrast to popular psychology theory that generally accepts a philosophy of mind, Natural Psychology explains psychology with biological reductionism to empirical neurobiology. In contrast to popular psychology theory that ignores simple mental principles advocated by our most eminent natural scientists, this theory explains psychology with the simple principle of motivated-thinking. In contrast to popular psychology theory that ignores how tissue physiology explains all other organs, this theory explains psychology with simple tissue neurophysiology. Lastly, in contrast to popular psychology theory that ignores the

philosophy of science requisite for falsifiability, this theory is falsifiable as addressed in Appendix I.

Natural Psychology is a parsimonious theory that integrates fragmented popular psychology theories into a comprehensive paradigm. This thesis unifies the basic principles of the five most popular theories of human psychology: structural psychology, functional psychology, psychoanalytic psychology, behavioral psychology, and humanistic psychology. This thesis is structural psychology; it explains behavior and the mental process in terms of the anatomy of the cerebral cortex and the limbic system. The cerebral cortex is the structure of thinking nervous tissue and the limbic system is the structure of motivating nervous tissue. This thesis is functional psychology; it explains behavior and the mental process in terms of motivation neurophysiology directing thinking neurophysiology. Thinking neurophysiology is the general flow of neural communication through the cerebral cortex (the exterior of the forebrain); motivation neurophysiology is the stagnated flow of neural communication into the limbic system (the interior of the forebrain). This thesis is psychoanalytical psychology as far as advocating that traumatic experiences cause mental distress, that they are often unavailable for recall, and that associative thinking can assist recall. This thesis is behavioral psychology; it explains all behavior as conditioned and therapy based significantly on conditioning experiences that neutralize emotional suffering and promote well-being. Lastly, this thesis is a humanistic psychology in explaining our common humanity (our common neurophysiology) and how it naturally fosters increasing altruism. Natural Psychology is a unified theory of structural psychology, functional psychology, psychoanalytic psychology, behavioral psychology and humanistic psychology.

Natural Psychology is an elegant, parsimonious new paradigm of human psychology explained by empirical tissue neurophysiology producing binary (systems) neuroscience. Understanding that rational consciousness is a function of associative thinking rather than a function of a mental principle of neo-rationalism is a radical paradigm shift in psychology. Natural Psychology may initially seem base and dehumanizing as a challenge to the nativist neo-rationalism of the current psychology/psychiatry paradigm. But there is natural grandeur in simple mental process of rational consciousness through associative thinking. This classical paradigm shift to better, more parsimonious natural science will greatly improve individual and community mental health. This is critical theory for people suffering from mental distress; it is crucial to understand that mental distress is emotional suffering- the natural neurobiology of distressful experiences. Natural Psychology is also valuable for community mental health that will benefit from a better understanding of the importance of civil and supportive social environments. Societies will not abandon the concepts of free will and individual responsibility; instead they will

adapt these concepts to the truth about our natural psychology. Self-knowledge will inspire an exciting new era of intellectual and moral enlightenment (McIntyre, 2006, p. 38). The prospects for improving the human social condition are dramatic as our common humanity promotes increased altruism and social justice and the creativity that expresses our unique experiences.

Appendix A

Neo-Dualism and Human Psychology

Natural Psychology is a natural science explanation of human psychology based on biological reductionism; it challenges popular theory for including a philosophy of mind. An abstract mind directing psychology is a widely accepted social construct but it is philosophy- not science. Cultural expectations often direct science; the social construction of the mind epitomizes this problem. There is no empirical support for the mind because the mind is an abstract concept; the mind cannot possibly be supported by science regardless of current efforts to do so. Classical dualism advocated a soul that is distinct from the physical brain; neo-dualism now advocates a philosophy of mind that is theorized to mediate between brain biology and the environment. Neo-dualism often describes psychological factors as distinct from biological factors with the analogy of the difference between computer software and computer hardware. This computer analogy attempts to give physical properties to an abstract concept of mind- to reify the mind. This analogy is popular because it attempts to support popular neo-dualism with a cultural fascination with the advanced scientific technology of computers; but again, this is philosophy rather than science. Consistently, the new psychology mantra that “the mind is what the brain does” is a turn of phrase that attempts to give physical properties to an abstract concept- to reify the mind. Since a philosophy of mind is not science, it is extraneous to a scientific understanding of human psychology.

Although classical dualism is theology and neo-dualism is philosophy, both attempt to elevate humans from a vilified concept of human nature. Consistent with other fundamental breakthroughs in natural science, understanding psychology starts by reconsidering the effort to separate from nature- to separate human psychology from human nature. Our culture unfortunately vilifies nature and perverts natural science theory when considering human nature. The unscientific vilification of human nature is a fundamental anomaly of popular psychology theory; it is wrong to consider human nature as only base, selfish and antisocial (Barkow, 1992; Wright, 1994, pp. 313-315; Pinker, 1997; Buss, 2007). All admirable, altruistic behavior is human nature. Human nature is glorious in totality regardless of uglier aspects. All behavior is natural- human nature; the effort to raise human psychology from a vilified concept of nature is unscientific. It is unscientific to vilify human nature by separating causation for desirable and undesirable behaviors and only attribute undesirable behaviors to natural origins. Popular theory that accepts natural causation for negative motivations and philosophical or theological causation

for positive motivations is exemplified by Freud's theory of the ego mediating between the primitive id and the moral superego. Considering negative behaviors to have natural origins while considering positive behaviors to have philosophical or theological origins is an obvious negative bias against human nature.

Current natural science theory vilifies nature with a perspective of nature as "red in tooth and claw" (Tennyson, 1849). The vilification of nature is expressed on the cover of *The Origin of Species* published by Bantam Books in 1999; it resembles a painting of hell by Hieronymus Bosch. It is unfortunate that popular evolutionary theory has historically been misused to support unconscionable theories of social exploitation. Contemptible theories of social Darwinism, eugenics, forced sterilization and the social control of behavior are wrongly attributed to natural science theory (McIntyre, 2006, p. 29). Consistent with the vilification of human nature, evolutionary psychology redefines altruism as non-altruistic; it describes altruism as merely promoting the self-interest of procreation or reciprocal positive returns (Wright, 1994, pp. 189-209; Passer, 2009, p. 656). This thesis understands that human nature produces behaviors that are reprehensible but these behaviors do not define human nature or the capacity of humans for moral, admirable behaviors.

Neo-dualism often describes psychological factors as distinct from biological factors with the analogy of the difference between computer software and computer hardware, but the analogy is ill-conceived. Artificial intelligence (A.I.), systems psychology and computational neuroscience ignore the fundamental principle of binary science and instead erroneously model the brain after details of computer functions. There are numerous scientific anomalies with current modeling of the brain after computers. First, the brain is malleable, growing and changing; computers are fixed systems. Neurons die and are replaced by new cells with new and different connections; this plasticity is inconsistent with the requisite that computer hardware and software remain fixed for proper interaction. This is especially true when considering the interaction of system software, programming software and application software. Second, the computational theory of mind fails to incorporate how brains learn by growing neural connections; computers are externally programmed. Third, neural connections vary widely with a variety of neurotransmitters; computers have a single switching mechanism. Fourth, computers work serially (inline) while the neural circuits of the brain work in parallel. Fifth, brains integrate different kinds of sensory data and staggering quantities of sensory data while computers integrate a significantly smaller amount of programmed data. Lastly, computer software/hardware has no direct relationship with known brain anatomy especially the difference between the cerebral cortex and the limbic system of the forebrain. These six anomalies of the computational

theory of mind are each a critical failing of the analogy. However it is a greater problem in modeling the brain after computers to ignore binary neuroscience while computers operate on a principle of binary science.

Current evolutionary psychology theory is increasingly complex and abstract (Cosmides, 1999); it becomes more philosophical abstraction and less science as theory moves from species to individuals to cells to genes (Dawkins, 1976). Moreover, sociobiology, evolutionary psychology and human behavioral ecology attempt to integrate evolutionary science into a philosophy of mind. Current evolutionary psychology theory focuses on the adaptability of an unknown, abstract philosophy of mind (Barkow, 1992; Wright, 1994; Pinker, 1997; Buss, 2007). Current theory about human nature advanced by evolutionary psychologists is ad hoc or post hoc (Gould, 1997); it is not falsifiable. It is unscientific for sociobiology, evolutionary psychology and human behavioral ecology to philosophize behavior based on general evolutionary theory while ignoring accepted empirical neurobiology. Furthermore, it is unscientific for sociobiology, evolutionary psychology and human behavioral ecology to describe complex details about behavior ultimately based on neurobiology they do not understand. In contrast, this new paradigm explains how behavior seeks species survival with basic empirical neuroscience.

In contrast to the current vilification of human nature, Charles Darwin describes all behavior as human nature in *The Descent of Man* (Darwin, 1871). Darwin addresses the value of altruism and cooperation for many species; *Homo sapiens* top that list. The popular vilification of nature contrasts Darwin's love of nature; Darwin was a self-described naturalist who embraced nature (Darwin, 1859; Darwin, 1871). Although Darwin states that the fittest will survive and pass along their genes, he did not describe the fittest as the meanest and most aggressive. Consistent with Darwin, Stephen Gould describes all human behavior as natural in *The Mismeasure of Man* (Gould, 1996, p. 39).

Human psychology is human nature; Natural Psychology explains all human behavior and mental processes with basic empirical neurobiology. A philosophy of mind is philosophy rather than science; it is extraneous to a natural science understanding of psychology. Natural Psychology challenges the popular vilification of human nature with an understanding that although there is much repugnant behavior, the common humanity of human nature motives increasing altruism (Sober, 1998).

Appendix B

Simple Principles of Human Psychology

In contrast to the social construction of a complex mental principle, Natural Psychology explains the simple binary neuroscience of motivated-thinking that explains complex thinking and complex behavior. It is a fundamental scientific anomaly of current psychology theory to *assume* that the brain functions through complex principles when: 1) brain functions are unknown, 2) eminent natural scientists advocate simple mental principles, and 3) scientists model the brain after computers that operate through binary science- the simplest math principle. It is a fundamental failure in scientific logic to assume complex mental principles while not understanding mental principles. Moreover, human psychology is understandable as natural science and natural scientists advocate simple mental principles of human nature. Einstein and most eminent natural scientists believe that human nature is based on simple principles hidden beneath an appearance of complexity (Lewin, 1998; Greene, 1999, p. xiii; Weinberg 2003). Furthermore, the simple principle of binary neuroscience is consistent with the binary science of computers that model the brain. The assumption of complex mental principles is a social construct that supports cultural expectations but is not supported by natural science.

Although human psychology is complex, this does not prove that it operates through complex principles. Many simple principles produce amazing complexity including fractals and computers. One hundred trillion neural connections create complex thinking and complex behavior but do not prove that thinking or behavior is a function of complex principles. Scientists accept parsimony as basic science theory but do not challenge popular psychology theory for its abstract complexity based on cultural expectations. Neuroscientists, evolutionary psychologists and philosophers of science accept complex principles of psychology distinguish psychology from our cultural vilification of nature (Wright, 1994, p.9 & p.35 & p. 287; Dennett, 1996; Wimsatt 1997; Wilson, 1998; Machamer, 2002; Kelly, 2007).

The evolutionary requisite of functional resilience dictates that body systems must operate properly over time; simplicity of operating principles promotes functional resilience. Maintenance engineers understand this principle and complain about problems inherent in complex engineering; their industry motto is the acronym K.I.S.S., "Keep it simple, stupid!" Simplicity of operating principles and related functional resilience is more important for human survival in nature than for machines. Popular psychology theory contradicts the evolutionary requisite of functional resilience when "mental disorders" are an epidemic (Whitaker, 2010) with thirty percent

of the population suffering annually (Bernstein, 2006, p. 576).

It is a critical scientific anomaly for current psychology theory to consider only complex principles and ignore simple principles of the brain. This thesis may be difficult to understand from the context of the established paradigm that glorifies complexity but it is parsimonious theory that explains human psychology with natural science.

Appendix C

Physiology Theory and Tissue Neuroscience

Organic science is explained by physiological theory; unfortunately, the social construction of complex mental principles obscures the basic structure of physiology theory. Physiological theory advocates a framework for explaining an organ based on systems at different organizational levels; it describes an organ in terms of tissue physiology, cellular physiology and molecular physiology. Tissue physiology, cellular physiology and molecular physiology each describe an entire organ. Consistently, physiologists describe their organization as the “American Physiological Society: Integrating the Life Sciences from Molecule to Organism.” Each organizational level of an organ is a generation of information that explains the organizational level above it. Physiologists explain organs as systems of tissues, explain tissues as systems of cells, and explain cells as systems of molecules. Physiologists explain organs with tissue physiology- with tissue systems; hence, the brain is explained with tissue neurophysiology. It is inconsistent with physiology theory for neuroscientists to investigate molecular and cellular neuroscience rather than tissue neuroscience. “Systems neuroscience” should investigate tissue systems rather than abstract, complex theorized “mental” processes. Cultural expectations for complexity and confusion about reductionism distract from a critical focus on tissue neurophysiology- systems of nervous tissues.

Consistent with physiology theory, simple principles of tissue physiology explain all organs. Physiology theory describes organizational levels as progressively more general and simpler to understand at larger levels of analysis. Physiology texts describe tissue physiology as far simpler to explain than cell physiology and describe cell physiology is far simpler to explain than molecular physiology. All physiological investigations except neurophysiology become substantially simpler while moving from a cellular level of investigation to a tissue level of investigation. Tissues are systems of cells working in unison; tissue neurophysiology implies cumulative neural functioning across nervous tissue. Cultural expectations for neural complexity prompt neurophysiologists to deviate from physiology theory to focus on the staggering complexity of molecular neuroscience. Molecular physiology is too complex to explain cellular physiology; it is illogical to expect molecular physiology to explain the function of an organ. Cellular physiology is far too complex to explain any organ of the body; investigating the brain with molecular neuroscience is a venture into obscurity. Physiology theory implores neuroscientists to retreat from obscure investigations of molecular neuroscience and consider

simple tissue neuroscience. An overview of accepted tissue neurophysiology explains the brain and human psychology with accepted neuroscience.

Besides cultural expectations for neural complexity obscuring the simple tissue physiology of nervous tissue, confusion about reductionism also obscures an investigation of tissue neuroscience. Reductionism is basic natural science theory; it describes a whole organ as explained by its parts. Consistently, physiologists contend that each organizational level of an organ is reducible to the organizational level below it and explained by the level below it; physiology is clearly reductionist theory. However, reductionism also describes the most basic science principle of parsimony; parsimony demands that scientists seek to reduce explanations to their simplest form. Investigating molecular neuroscience rather than tissue neuroscience is not reductionist in terms of parsimony; molecular neuroscience is not simpler than tissue neuroscience. Tissue neuroscience is simpler than molecular neuroscience and equally inclusive; each level describes the entire brain. Reductionism and parsimony implore neuroscientists to focus on tissue neuroscience; it is far simpler and equally inclusive as molecular neuroscience.

The structure of physiology theory is a critically important framework for investigating neurophysiology and physiological psychology. Physiology explains organs with simple tissue physiology; consistently, simple tissue neurophysiology explains how the brain works. Cultural expectations for neural complexity and erroneous implications from reductionist theory distract from a critical focus on simple tissue neurophysiology- on nervous tissue. Neurophysiologists have all the information that they need to understand tissue neuroscience since they have a general understanding of nervous tissue and a specific understanding of neuron cells. Physiology theory implores neuroscientists to theorize about tissue neurophysiology based on the cumulative effect of accepted cellular neurophysiology. Although neuroscientists have been unable to postulate a theory of nervous tissue, it is a critical failing in logic to focus elsewhere. The brain is explained by binary tissue neurophysiology- by the interaction of two different structures of nervous tissue.

Appendix D

The Neuroscience of Thinking

Consistent with the scientific understanding of the function of all other organs, thinking is explained by tissue physiology- by nervous tissue. The nervous tissue of the cerebral cortex (the exterior of the forebrain) is thinking anatomy; it is structured for thinking. Substantially common genetics create substantially common patterns of neural communication through the cerebral cortex. The general flow of neural communication through connectionist networks of the cerebral cortex is thinking physiology for humans; it explains rational consciousness based on associative thinking. Connectionist neural networks connect (associate) the critical senses of touch, sight and hearing in the central area, *association area* of the posterior cerebral cortex. Thereafter, neural information is channeled forward into the frontal cerebral cortex to produce more complex connections (associations) in the main, *association area* of the frontal lobe. The empirical neuroscience of the nervous tissue of the cerebral cortex explains associative thinking and how it produces rational consciousness. Popular theories of connectionist neural networks and related theories of parallel distributed processing (PDP) support associative thinking. Unfortunately, current PDP theory erroneously tries to adapt this empirical science to an abstract, complex philosophy of mind. The nervous tissue of the cerebral cortex explains associative thinking; this empirical neuroscience is observable and verifiable.

The brain is comprised of both white matter and gray matter that have different functions. Areas of white matter and areas of gray matter are substantially common in the cerebral cortex based on substantially common genetics. White matter has longer myelinated axons that direct neural communication; gray matter has shorter unmyelinated axons that are significantly less directional. The directional nature of white matter creates substantially common thinking patterns for humans; consistently, essentially common fissures and ventricles also promote common thinking patterns. In contrast to white matter that creates common thinking patterns, connectionist networks of gray matter in association areas of the cerebral cortex create significantly unique thinking based on learning. Learning (growing dendrite to connect neurons) from personal experience creates the unique neural interconnections of gray matter in association areas of the cerebral cortex. Unique human psychology is created by the unique physical connections of gray matter in the cerebral cortex based on unique learning from unique individual experience.

The common flow of neural communication through the cerebral cortex is empirical

neuroscience that can be described in more detail. Primary sensory information about touch, sight and hearing is channeled into different areas of the peripheral posterior cerebral cortex; primary sensory information creates an understanding of the environment. Secondary sensory information is supportive of primary sensory information. Secondary sensory information provides survival clues about the desirability or undesirability of tastes and smells; they are substantially channeled into the limbic system to affect motivation. Primary sensory information flows to different areas of the peripheral of the posterior cerebral cortex: 1) information about touch from the somatosensory system is directed through the brainstem and the somatic sensory cortex (posterior of the central fissure) to the superior cerebral cortex, 2) visual information flows through the optic nerve to the visual cortex at the posterior cerebral cortex, and 3) auditory information is directed to the auditory cortex at the lateral cerebral cortex. Primary sensory information is thereafter channeled with white matter from the peripheral of the posterior cerebral cortex to the central, association area of the posterior cerebral cortex. The less-directional gray matter of the association area in the central posterior cerebral cortex interconnects primary sensory information. Thereafter, common neural pathways direct neural information from the association area of the posterior cerebral cortex forward into the association area in the central area of the anterior cerebral cortex. The frontal lobe is substantially gray matter of less-directional neuron cells that creates complex interconnections based on learning from lived experience. Accepted neuroscience describes complex patterns of neural interconnection in the association area of the frontal lobe producing complex thinking including cognition, rationality and consciousness. Neural connectionist networks in the frontal lobe produce behavior when neural information is directed into the motor cortex (anterior of the central fissure) at the superior cerebral cortex. Neural information directed into the motor cortex is channeled by white matter down through the spinal cord to the peripheral nervous system to stimulate muscles for behavior. The empirical neuroscience of the common flow of neural communication through the cerebral cortex explains (associative) thinking and behavior.

The general flow of neural communication through the cerebral cortex explains current mysteries surrounding damage to different areas of the brain. Brain damage to Wernicke's area causes a loss of language comprehension because this area is directly in the path of the flow of auditory information. Wernicke's area lies directly in path of the common flow of auditory information from the auditory cortex to the association area of the posterior cerebral cortex. Consistently, brain damage to Broca's area causes a loss of speech motor skills because this area is directly in the path of the general flow of neural communication to the muscles of the mouth. Broca's area lies directly in the path of neural information from the association area of the

frontal lobe to the area of the motor cortex that affects the muscles of the mouth. Since the brain is a living organ that develops (learns) from individual experience, the exact location of these functions varies slightly between individuals. Consistently, since the brain is a living organ that learns from experience, some rehabilitation is possible by developing new connectionist networks that bypass areas damaged by trauma.

Physiology theory and biological reductionism implore scientists to explain associative thinking with nervous tissue and explain nervous tissue with cellular neuroscience; tissue physiology is the cumulative effect of cellular physiology. A neuron cell communicating with another neuron cell at their synapses explains networks of neurons connecting throughout the nervous tissue of the cerebral cortex. Cellular thinking is a simple, glorious process of passing neurotransmitter chemicals from one neuron to another neuron after passing an action threshold. Humans learn and create new thoughts by forging new dendrite connections between neurons in association areas of the cerebral cortex. Unique thoughts are learned by growing unique physical connections from unique lived experiences. Accepted cellular neurophysiology explains elemental tissue neurophysiology that explains associative thinking; molecular neurophysiology is extraneous for understanding thinking.

Associative thinking is explained by the anatomy and physiology of the cerebral cortex. The brain associates sensory data in the posterior cerebral cortex and thereafter associates more complex connections in the frontal cerebral cortex. This basic empirical neuroscience is lost to established theory that socially constructs a complex neo-rational mental principle. It is unfortunate that scientists use our advanced technology including brain scans to philosophize about a complex, abstract mental process (Amen, 1999). Rational consciousness and all other thinking is associative thinking; associative thinking is explained by basic empirical neuroscience that is observable and verifiable.

Appendix E

The Neuroscience of Motivation

Consistent with the scientific understanding of the function of all other organs, motivation is explained by tissue physiology- by nervous tissue. Associative thinking is motivated to seek the greatest electrical brain energy of life (neurophysiological energy) from the strongest associative thought from the previous thought or from sensory stimuli. Since experiences associated with physiological energy during formative years are generally experiences of emotional well-being, behavior is naturally motivated to seek well-being. Conversely, since experiences associated with neurophysiological energy deprivations during formative years are generally experiences of a lack of emotional well-being, behavior is naturally motivated to avoid distressful experiences. Consistent with physiology theory, human motivation is explained by the nervous tissue of the limbic system. In contrast to the flow of neural communication through the cerebral cortex, the flow of neural communication dead-ends into the hippocampus and amygdala of the limbic system. The dead-end structures of these nervous tissues of the limbic system are the anatomy of motivation and their function is motivation neurophysiology. The dead-end structures of the hippocampus and amygdala (shaped like ram's horns) make them especially sensitive to their level of neurophysiological energy by stagnating the flow of neural communication. The inhibited flow of neural communication in the limbic system makes action potentials more difficult and thus these neurons cells are more sensitive to their physical state. Tissue physiology is the cumulative effect of cellular physiology; cellular neurophysiology explains tissue neurophysiology. The sensitivity of the neuron cells of the hippocampus and amygdala to their neurophysiological energy and health explains the tissue motivation to seek neurophysiological energy and health. Elementary neurophysiology explains the human motivation for the mental process to seek the strongest associative thought and for behavior to seek well-being. Consistently, behavior seeking well-being explains evolutionary theory of behavior generally seeking species survival.

The nervous tissue of the limbic system is the anatomy of motivation; the function of the limbic system is motivation neurophysiology. The dead-end structure of the limbic system promotes neurophysiological energy with two sets of nervous tissues: 1) it directs the endocrine system with the hypothalamus, and 2) it senses the neurophysiological energy of the forebrain with the hippocampus and amygdala. First, the limbic system fosters neurophysiological energy by managing the endocrine system that motivates behavior as well as regulating physical

development with hormones. The hypothalamus of the limbic system rewards experiences associated with well-being by directing the pituitary gland to produce desirable hormones like endorphins. Conversely, the endocrine system punishes distressful experiences associated with a lack of well-being by directing the adrenal glands to produce uncomfortable stress hormones like epinephrine. Stress hormones motivate behavior into action to promote survival but are distressful. Second, besides directing the endocrine system, the limbic system fosters neurophysiological energy with the function of the dead-end structures of the hippocampus and amygdala. The hippocampus and amygdala are especially sensitive to neurophysiological energy; they sense neurophysiological energy as desirable and sense deficits of neurophysiological energy as aversive. The level of neurophysiological energy of the hippocampus and amygdala is directly related to the overall level of neurophysiological energy of the forebrain and thereby the whole organism. Damaging the hippocampus hinders its ability to sense neurophysiological energy and thereby reduces the motivation for behavior and the sensation of emotions. The amygdala is a more slender structure with an expanded end; damage to this structure is more problematic. Damage to the amygdala nearly eliminates the sensitivity to neurophysiological energy and thereby nearly eliminates the motivation for behavior. Since people remember experiences that have importance in their lives and forget mundane experiences, damage to the hippocampus and amygdala destroys the motivation necessary to create new memories. The hippocampus and the amygdala provide the motivation to create memories; current theory pushes complexity to absurdity when theorizing about memories stored in these cells. The limbic system promotes neurophysiological energy by sensing the level of neurophysiological energy in the brain and seeking higher energy levels. The neurophysiological motivation of the limbic system to seek energy explains the motivation for the mental process to seek the energy of the strongest associative thought and for behavior to seek well-being.

Physiology theory and biological reductionism implore scientists to explain human motivation with nervous tissue and to further explain tissue motivation with cellular motivation. The neurophysiological motivation of the nervous tissue of the limbic system to seek energy is explained by the cumulative effect of the neuron cell motivation to seek energy and avoid a lack of energy. Neuron cells have a unique ability to sense their own physical condition; they seek the electrical brain energy of life and avoid a lack of neurophysiological energy. Scientists accept the biological motivation of neurons to seek homeostasis- a resting potential; neurons avoid a lack of energy by seeking homeostasis. Neuron cells sense the imbalance of a lack of homeostasis as an aversive lack of physical energy. However, the biological motivation to seek a resting potential is incomplete; if neurons only sought homeostasis, humans would seek sleep and comas rather

than life and reproducing the species. Besides seeking homeostasis, neuron cells seek the energy of life- an action potential; seeking an action potential is seeking neural energy. The neuron cell is a sensing cell; a neuron cell senses the electrical brain energy of the spark of life as attractive and energy deficits of a lack of homeostasis as aversive. Consistently, neuron cells sense hormones associated with wellbeing (like endorphins) as attractive and stress hormones associated with distress (like epinephrine) as aversive. The cumulative effect of the neural motivation to seek energy explains the nervous tissue motivation to seek energy that explains the motivation for thinking and behavior.

The motivation for the mental process to seek the energy of the strongest associative thought and for behavior to seek well-being is explained by the function of the nervous tissue of the limbic system. The motivation of the nervous tissue of the limbic system to seek neurophysiological energy is further explained by the cumulative effect of the cellular motivation to seek energy and avoid a lack of energy. The cellular motivation to seek neurophysiological energy may eventually be explained by the cumulative effect of molecular motivation, but this is extraneous to explaining human motivation. Elemental empirical neuroscience explains human motivation.

Appendix F

Explaining Popular Psychology Theory

Natural Psychology is a parsimonious new paradigm of human psychology; it provides a comprehensive explanation of popular psychology theory. Behavior and the mental process are explained by the empirical binary neuroscience of common motivation physiology directing common thinking physiology based on lived experience. The mental process seeks the strongest associative thought and behavior seeks well-being as a function of unique personal experience. Natural Psychology is a unified explanation of learning, cognition, memory, mental states of consciousness, perception, intelligence, personality, language, and social psychology. This appendix explains popular theories about learning, cognition and memory in terms of associative thinking for future, present and past thinking respectively. This appendix also explains states of consciousness, perception, and intelligence consistent with all thinking: the mental process seeks the strongest associative thought. Lastly, this appendix explains personality, language and social psychology consistent with all behavior: behavior seeks well-being through associative thinking as a function of personal experience. Natural Psychology unifies the fragmented, complex, abstract and ambiguous current theory with an elegant new paradigm.

Popular learning theory generally accepts associative thinking while erroneously attempting to adapt to cultural expectations for a complex neo-rational mental principle. Behavior science proves that learning is a function of associative thinking with behavior conditioning. Learning starts in the womb; a baby's temperament is often learned based on fetal experiences. Learning is produced by the physical interconnection of neurons in association areas of the cerebral cortex as a function of experience; associative learning is a process of forging new neural connections. Neuroscientists prove that learning is a function of growing dendrite to connect neurons with empirical observations of environmentally deprived brains having significantly fewer dendrite connections. Popular learning theories of *observational learning* and *modeling* affirm learning based on associative thinking. Popular descriptions of an *orienting response*, *habituation* and *sensitization* are attempts to adapt associative learning to a complex neo-rational mental principle. To the extent that the popular concept of reinforcement is consistent with promoting personal well-being, current learning theory correctly describes behavior *reinforcers*. However, current theory fails to understand reinforcers when they do not promote well-being; thus *external reinforcers* are rarely successful when they are perceived as manipulative. Current learning theory is basically correct in describing *connectionist neural*

networks in a *parallel distributed processing* model but it erroneously attempts to adapt PDP to a complex neo-rational mental principle.

Popular cognition theory attempts to explain cultural expectations for a complex neo-rational mental principle but it lacks structural and functional neuroscience support. This thesis explains popular theories of *reasoning*, *problem-solving* and *decision-making* with a more fundamental theory of motivated thinking. Seeking the strongest association of the previous thought or of sensory stimuli produces a train of thought that is often reasoning, problem solving or decision-making. In contrast to this parsimonious theory, current cognitive theory describes a complex, ambiguous mental process that interprets environmental stimuli after encoding, storing and decoding information. The popular cognitive theory of parallel distributive processing seeks to adapt the empirical neuroscience of connectionist networks to an erroneous principle of complex neo-rationalism. Popular descriptions of biologically based mechanisms are only hypothetical constructs; they do not identify a structural and functional neuroscience process. Jean Piaget advocated a classical cognitive theory but it merely describes common age-related experiences that fostered well-being for EuroAmerican culture during his era (Piaget, 1954). The multitude of newer theories about cognition based on neo-rationalism should discount their individual value. It is unfortunate that the most fundamental principle of popular cognitive theory is rarely stated; it presumes that the mental process operates on a complex, ambiguous principle of neo-rationalism. In contrast, associative thinking is explained with elemental empirical neuroscience; it is parsimonious science- better science

Popular memory theory attempts to explain cultural expectations for a complex neo-rational mental process while generally supporting associative thinking. Natural Psychology describes recall consistent with all thinking; recall is the strongest associative thought when it is about a past thought or experience. Stronger memories have stronger associations and are easier to recall; memories about mundane experiences are difficult to recall. Hence, it is difficult to establish memories and difficult to recall thoughts while distracted by stronger thoughts; recall can be easily “scared” out of people. Consistent with all thinking, extremely traumatic experiences are often unavailable for recall because they are rarely the strongest associative thought. The strongest associative thought of extremely traumatic experiences is fear and panic rather than details that would orient the experience for recall. Amnesia describes traumatic experiences that are unavailable for recall because their painfulness is a stronger associative thought than the traumatic experience. The parallel distributed processing model correctly identifies the empirical neuroscience of memory but erroneously seeks to adapt the associative thinking of connectionist networks to a complex neo-rational principle. Popular memory theory

supports associative thinking with evidence that recall reactivates the same connectionist neural networks that were activated by the preceding thought (Nyberg, 2001). Popular *context-dependent memory theory* (*state dependent theory, mood–congruent theory, encoding specificity principle theory*) correctly describes associative recall; retrieval cues rely on associative thinking. Since learning about the world through associations takes time to develop, our understanding of the world is too abstract for recall during the first two years of life. The most popular method of promoting recall is *mnemonics*; mnemonics establishes a chain of strong intermediate associations that promote recall. The mnemonics method of *loci* has been popular since the ancient Greeks developed this method of promoting recall by associating a visual image with a physical location. Marcel Proust became famous for his description of memory based on associative thinking; he describes the rush of memories produced by sights and sounds associated with childhood experiences (Proust, 1927). Consistently, music associated with an emotional experience fosters recall of experiences when they are heard after an intervening period. Recall is enhanced by various methods that rely on associative thinking. In contrast to memory theories based on associative thinking, memory theories about encoding, storage and retrieval are socially constructed in support of a neo-rational mental principle. Current memory theories of *sensory memory, short-term and long-term memory, declarative memory and procedural memory* lack structural and functional neuroscience support; they also lack parsimony. Consistent with all thinking, humans recall previous thoughts and experiences when they are the strongest associative thought.

All thinking is associative thinking including thinking related to future thoughts (learning), present thoughts (cognition) and previous thoughts (memory). Although scientists accept learning and memory based on associative thinking, they fail to consider an alternative to a mental principle of neo-rationalism. Consistent with cognitive theory, states of consciousness, perception and intelligence are also explained by associative thinking.

Popular theories about states of consciousness attempt to explain cultural expectations about a complex neo-rational mental principle but they lack structural and functional neuroscience support. In contrast to abstract psychology theories about states of consciousness, Natural Psychology describes consciousness consistent with mainstream medical science. Medical science describes the mental states of consciousness, semi-consciousness and unconsciousness as a function of the quantity of sensory information entering the brain. Consciousness describes sufficient information from the senses to create self-awareness and orientation to the environment. Elevated consciousness from the sympathetic nervous system has evolved to foster survival; stress hormones increase sensory stimuli and neurophysiological

energy. Conversely, decreased consciousness is produced by fatigue and physical sickness that reduce sensory stimuli and neurophysiological energy. Semi-consciousness describes reduced information entering the brain during deep relaxation and sleep. Associative thinking during sleep is abstract because it has little sensory information for orienting to the environment; associative thinking becomes too abstract for recall during deeper sleep. The stages of sleep artificially categorize degrees of reduced sensory information to the brain. Consistently, meditation, yoga, acupuncture and hypnosis are not different states of consciousness; they are normal consciousness that approaches semi-consciousness. Unconsciousness describes a greater restriction of sensory information entering the brain during comas; comas evolved to promote deep physical rest to aid recovery from physical trauma. Consistently, anesthesia causes unconsciousness by restricting the flow of sensory stimuli to the forebrain. The unconscious mental state of a coma is physical and real; this contrasts Freud's abstract description of repressed memories as *subconscious* or *unconscious*. Although mind-altering drugs also affect the brain, mental states are a function of varying quantities of sensory information entering the brain. In contrast to popular psychology theory that socially constructs abstract states of consciousness, Natural Psychology is a reductionist, parsimonious theory of consciousness, semi-consciousness and unconsciousness consistent with medical science.

Popular perception theories attempt to explain cultural expectations about a complex neo-rational mental principle but they lack structural and functional neuroscience support. Current perception theory theorizes about sensory stimuli being encoded, organized and interpreted supports cultural expectations for complexity but elemental empirical neuroscience supports associative thinking with parsimony. Parallel distributive processing in perception theory describes the empirical neuroscience of connectionist neural networks but erroneously attempts to adapt this neuroscience to a neo-rational mental principle. *Visual perception, principles of organization, principles of components, depth perception, motion perception and perceptual constancies* are cultural descriptions of associative thinking. Perceptual illusions are confusing based on a neo-rational mental principle but are readily explained by the manipulation of typical associations. The perception of physical pain is based on learned associations with physiological energy deficits; hence there is a wide variation of pain reported among people with similar injuries. Consistently, some members of non-western cultures do not experience pain from rituals that would cause excruciating pain to westerners (Melzak, 1973). Pain based on associative thinking from experience also accounts for pain epidemics (Gawande, 1998). Sensory information from one sense can be associated with another sense; *synesthesia* is readily explained with associative thinking while inexplicable with popular theory. The multitude of

competing popular perception theories should discount their individual value; in contrast, Natural Psychology explains perception with a reductionist, parsimonious theory based on associative thinking.

Popular intelligence theories support cultural expectations for a complex neo-rational mental principle but they lack structural and functional neuroscience support. Current intelligence theories seek to describe levels of mental acuity that typically remain relatively consistent over a lifetime based on cumulative learning and the preeminence of early learning. Mental acuity is generally a function of motivation, focus, and the quality of environmental stimuli; more motivation, an unconflicted focus and more environmental stimuli produce better mental functioning. Less environmental stimuli produce mental retardation as documented in studies of early American orphanages (Spitz, 1945) and Romanian orphanages in the 1990's. Less motivation and a conflicted focus also reduce mental acuity. Since the quality of environmental stimuli has improved over the last couple centuries, mental acuity and I.Q. scores have also improved; this disputes a genetic basis for intelligence (Wade, 2006, p. 94). Consistently, Stephen Gould articulately disputes the concept of innate intelligence (Gould, 1996). The multitude of competing popular intelligence theories should discount their individual value; in contrast, Natural Psychology explains intelligence with a reductionist, parsimonious theory based on associative thinking.

Popular theories about mental states of consciousness, perception and intelligence as well as theories about learning, cognition and memory support cultural expectations for a complex neo-rational mental principle. In contrast, associative thinking explains them with a comprehensive, reductionist, parsimonious theory. Consistently, popular theories about personality, language and social psychology are behaviors that are understandable consistent with all behavior; they seek well-being based on associative thinking from individual experience.

Popular personality theories attempt to explain cultural expectations for a complex, nativist neo-rational mental principle but they lack structural and functional neuroscience support. In contrast, personality is habitual behavior patterns fostered by associative thinking. Since learning is cumulative, understanding the environment starts early with a baby's temperament and is often slow to change significantly. Freud's psychodynamic theory of personality development was a valiant scientific effort in its day but his theory lacks a relationship to developed empirical neuroscience. A humanistic approach to personality was initiated by Carl Rogers and Abraham Maslow; they describe the behavior motivation of seeking well-being in terms of seeking self-actualization. Seeking self-actualization is a common motivation in western cultures but ignores the common motivation of eastern cultures to seek communalism. While Roger's perspective of

personality development is skewed towards describing prosocial behavior, Freud's perspective is skewed towards describing patterns of antisocial behavior. Similar to Freudian personality theory, Roger's personality theory lacks a relationship to developed empirical neuroscience (Rogers, 1961). Abraham Maslow proposed a classical personality theory in terms of a hierarchy of needs; he described common age-related social goals that typically fostered well-being for Euro-American culture during his era (Maslow, 1943). Erik Erikson proposed another classical personality theory by describing common age-related social experiences that typically fostered well-being for Euro-American culture during his era (Erikson, 1959). Freud, Rogers, Maslow and Erikson all describe personality theory based on seeking self-actualization common to western cultures but exclude the communalism that promotes well-being in eastern cultures. More recently, several new personality theories including the *cognitive-effective personality system*, the *five factor model* and the *16-PF model* are increasing able to describe behavior patterns but are not inclusive. The multitude of competing personality theories should discount their individual value; in contrast, behavior seeking well-being based on associative thinking from experience is a reductionist, parsimonious theory.

Popular language theories attempt to make this behavior consistent with cultural expectations for a complex neo-rational mental principle but they lack structural and functional neuroscience support. In contrast, this theory describes language as a behavior that seeks well-being similarly to all other behaviors. People learn language to communicate because communicating with others typically promotes well-being; people have difficulty learning language or communicating when it does not promote well-being. Just because no one teaches toddlers grammar does not mean that there is a *language acquisition devise*- an abstract mental mechanism without structural and functional neuroscience support. Syntax is learned through associations that vary depending on the language and culture; consistently, the embattled *linguistic relativity hypothesis* describes how language shapes the way that we think (Whorf, 1956). Noam Chomsky's rejection of language as a function of behavior conditioning is based on misunderstanding the motivation for behavior conditioning. Behavior conditioning is based on our natural motivation to seek well-being; Chomsky and behaviorists are wrong to believe that the motivation for behavior conditioning is based on external reinforcement. The multitude of popular, competing language theories should discount their individual value; in contrast, seeking well-being explains the motivation for language with a reductionist, parsimonious theory.

Popular social psychology theories attempt to make social behavior consistent with cultural expectations for a complex neo-rational mental principle but they lack structural and functional neuroscience support. In contrast, Natural Psychology describes social behavior

consistent with all behavior; it seeks well-being through associative thinking as a function of personal experience. Humans typically achieve well-being through social support and experiences that affirm a self-image; hence people are habitual and generally like familiarity (Nairne, 2003, pp. 478-479). The well-being of social affirmation is usually achieved through conformity to social norms that fosters reciprocal social support. Although ethnocentricity generally fosters the well-being of social support, it can unfortunately also foster prejudice as a function of (antisocial) lived experience. Sadly, physical dominance over others can similarly be a conditioned association of well-being that reduces negative emotions of powerlessness. But altruistic behavior is increasingly fostering well-being from experiences of empathy as cultures develop and we better understand our common humanity. Thus, some cultures produce significantly more altruism than others (Wade, 2006, pp. 480). Fairness typically promotes well-being; people therefore dislike hypocrisy and feel *cognitive dissonance* when their own behaviors do not match their ideals. Sociocultural psychology describes the wide variety of cultural norms for behavior that promote well-being based on associative thinking as a function of experience-cultural experience. The multitude of competing social psychology theories should discount their individual value; in contrast, describing behavior as seeking well-being is a reductionist, parsimonious theory.

Popular theories about personality, language and social psychology support cultural expectations for a neo-rational mental principle but Natural Psychology explains them with a unified, reductionist, parsimonious theory. Natural Psychology is a comprehensive explanation of learning, cognition, memory, mental states of consciousness, perception, intelligence, personality, language, and social psychology. Natural Psychology explains behavior and the mental process; the mental process seeks the strongest associative thought and behavior seeks well-being as a function of singular lived experience. Natural Psychology is elegant science.

Appendix G

Criticisms of the Medical Model of Mental Distress

The medical model of “mental disorders” erroneously purports biological reductionism but is not reducible to empirical brain biology and is plagued by several anomalies of science principles. As addressed in the first chapter, the medical model falsely claims biological reductionism while: 1) advocating an abstract philosophy of mind in contrast to biology, 2) lacking consideration of simple mental principles consistent with natural science theory, 3) lacking consideration of tissue neurophysiology consistent with physiology theory, and 4) lacking falsifiability consistent with the philosophy of science requisite. Moreover, it is unscientific for the medical model to claim a biological dysfunction of a normal mental process without describing a normal mental process. The medical model claims biological reductionism but instead is based on the fallacy of reification (the fallacy of false concreteness, the fallacy of misplaced concreteness, the fallacy of false certainty, the fallacy of abstraction) (Wesley, 2008, pp. 16-19; Ross, 2007, p. 110; Greenberg, 2013; Kirk, 2013). The fallacy of reification is the pseudoscience and illogic of giving physical qualities to abstract concepts; this is the fallacy of treating a hypothetical construct as a concrete entity. The brain and brain diseases are physical but the mind and mental illnesses are not physical; popular theory falsely reifies the *mind* and *mental disorders* from abstract concepts into physical entities. Besides critics of behavioral genetics as described in Chapter Four, there are numerous critics of the popular medical model of mental distress because it lacks validity- scientific meaning and biological truth (Bental, 1990; Breggin, 1991; Chua, 1995; Ross, 1995; McGrath, 1999; Sieben, 1999; Colbert, 2001; Boyle, 2002; Bental, 2004; Read 2004; Jackson, 2005; Bracken, 2006; Double, 2006; Ross 2007; Cohen, 2008; Sinaikin, 2010; Greenberg, 2013; Kirk, 2013; Sidley, 2015; Whitaker, 2015). In contrast to the medical model, Natural Psychology explains mental distress as emotional suffering (and anti-social reactions to the suffering) based on associative thinking; it is the natural, normal neurobiology of distressful experiences. Natural Psychology is real biological reductionism to empirical tissue neurophysiology.

Growing challenges to the validity of the DSM are increasingly undermining its sacred value. In May of 2013, the American Psychiatric Association published a new DSM (the DSM-5) that failed to achieve its mandate of a biological foundation for the medical model. A task force was assembled over a decade earlier to develop a scientific foundation to validate DSM-5 diagnoses but was unable to discover any biological basis for the DSM categories (Greenberg,

2013, p.197-8). Psychiatrists tried to make new diagnostic categories more logically consistent by reducing exceptions but they only exposed more scientific failings in the process. The publication of the new DSM-5 initiated several books that articulately critique the foundational failings of the medical model (Frances, 2013; Greenberg, 2013; Kirk, 2013; Taylor, 2013; Sidley, 2015). Steven Hyman (former director of NIMH) acknowledged the failure to establish a biological basis for the new DSM-5 (cited by Carey, 2005). The task force settled on merely jostling a few categories to bring diagnosis criteria in line with current politics. Most importantly, the DSM-5 reduced the criteria for normal grief after the death of a spouse or child (for a loved one) to two weeks; longer periods of grieving are now considered a *mental disorder*. This absurd labeling of normal human suffering is an affront to common sense; it can only be understood in terms of caving to the influence of Big Pharma. The British Psychological Association rejects the DSM for its pseudoscientific foundation and the medicalization of normal emotional suffering (British Psychological Association, 2012). The American Psychiatric Association *Textbook of Psychopharmacology* and leading researchers for the DSM-IV admit that they do not understand mental distress (Schatzberg, 2009). Thomas Insel (the previous director of the National Institute of Mental Health) and other eminent psychiatrists admit that the DSM lacks validity in describing *mental disorders* (Boyle, 2002; Insel, 2005; Insel, 2009; Insel, 2013; Miller, 2010; Fuchs, 2012; Deacon, 2013; Graham, 2013; Kirk, 2013; Sidley, 2015). Consistently, Allen Frances (the chairman of the DSM-IV Task Force) complains about the lack of scientific validity of the DSM and the pathologizing of natural behaviors (Frances, 2012; Frances, 2013). This type of illogic of the DSM-5 prompted the conservative psychiatrist for Fox News to describe the DSM-5 as a “dangerous work of fiction” (Ablow, 2013). There are numerous other articulate critics of the DSM (Scheff, 1966; Torrey, 1974; Cohen, 1990; Breggin, 1991; Kirk, 1992; Modrow, 1992; Kirk, 1994; Ross, 1995; Caplan, 1996; Kutchins, 1997; Joseph, 2004; Sadler, 2004; Sinaikin, 2010, 42-86; Watters, 2010; Frances, 2012; Bracken, 2012; Frances, 2013; Greenberg, 2013; Kirk, 2013; Taylor, 2013, Kinderman, 2014; Sidley, 2015; Thomas, 2015; Whitaker, 2015). Although psychiatry has shifted with the culture towards greater political correctness, its scientific foundation has not improved. The DSM is a manual of imposing size and complexity but it is not a scientific manual.

Psychology and psychiatry falsely describes natural mental distress as a *mental disorder* based on: 1) symptoms of emotional suffering and anti-social reactions to the suffering, 2) medical sounding labels for symptoms, 3) theorized correlations with chemical imbalances, 4) hypothetical constructs from behavioral genetics and current behavioral neuroscience, and 5) psychiatry’s relationship to other medical sciences that are based on real biological reductionism.

First, psychology and psychiatry reify symptoms of emotional suffering (and anti-social reactions to the suffering) into disorders in the DSM by committee vote and without an explanation beyond the symptoms- without any biological criteria (Greenberg, 2013; Kirk, 2013). The medical model reifies symptoms into a theorized biological dysfunction that causes its own symptoms; this is circular reasoning. The DSM diagnostic categories are flexible so they can conform to personal histories and personal histories can be adjusted to conform to diagnostic categories. The DSM describes ambiguous categories with complexity; this ambiguity is exemplified by many groups of symptoms ending with catch-all categories described as “other,” “unknown,” or “not otherwise specified.” A final category described as “other conditions that may be a focus of clinical attention” is a larger catch-all that further exemplifies the ambiguity of the manual. This flexibility means that the DSM fails the most basic philosophy of science requisite for science theories to be falsifiable (Popper, 1959). Falsifiability is our best tool for differentiating between ad hoc (or post hoc) theories and real science; it is discussed in Appendix I. The DSM describes symptoms of mental distress in detail but a better description of symptoms does not equate to a better understanding; this again is circular reasoning.

Second, psychology and psychiatry also reify medical sounding labels for symptoms of emotional suffering (and anti-social reactions to the suffering) into disorders similarly to reifying the symptoms themselves. Popular theory typically describes the symptoms of a theorized disorder with a Greek or Latin term and thereafter uses the medical sounding term to imply an explanation for the symptoms (Horwitz, 2002). For example, psychologists describe the cause of bedwetting as Enuresis (a Greek word for urinating) and thereafter imply profound insight when declaring that bedwetting is caused by Enuresis- urinating. Again, this is circular reasoning.

Third, psychology and psychiatry still advocate that a chemical imbalance causes mental distress after these correlations have been widely disproved and are no longer defended by them. It is now widely accepted among neuroscientists that there is no scientific support for a correlation between mental distress and chemical imbalances (Ross, 1995; Hyman, 1996; Valenstein, 1998; Hales, 2002; Whitaker, 2002; Lacasse, 2005; Double, 2006; Moncrieff, 2008; Kirsch, 2008; Turner, 2008; Bentall, 2009; Deacon, 2009; Kirsch, 2010; Carlat, 2010; Watters, 2010, pp. 234-240; Whitaker, 2010; Leo, 2012; Kirk, 2013; Gotzsche, 2014; Moncrieff, 2014; Healy, 2015; Insel, 2015; Sidley, 2015; Whitaker, 2015). Nevertheless, pharmaceutical industry marketing and many psychiatrists continue to advocate this correlation as scientific support (Kirk, 2013). The chemical imbalance hypothesis is also discounted by scientific research that supports the use of selective serotonin reuptake *enhancers* in France (Greenburg, 2010). Selective serotonin reuptake enhancers have the opposite effect of selective serotonin reuptake inhibitors (S.S.R.I.'s) that are

widely prescribed in the United States. Moreover, a correlation between serotonin (or dopamine) with a specific *mental disorder* is illogical because it functions too generally to produce specific behaviors (Joseph & Ratner, 2010). While neuroscientists have retreated from the chemical imbalance theory, it is still promoted by the pharmaceutical industry and their massive financial interests (Mosher, 1993; Mosher, 1998; Healy, 2000; Angell, 2004; Sharfstein, 2005; Ross, 2008, pp. 142-144; Watters, 2010, pp. 223-242 & pp. 187-18; Gotzsche, 2013; Greenberg, 2013; Kirk, 2013; Sidley, 2015; Whitaker, 2015). It is unscientific to support the medical model with a theorized correlation between chemical imbalances and mental distress since the correlation is no longer accepted. Moreover, it is unscientific to support the medical model with correlations when scientific logic dictates that correlations do not prove causation.

Fourth, psychology and psychiatry reify *mental disorders* from the complex and obscure hypothetical constructs of behavioral genetics and current behavioral neuroscience. The recondite, obscure investigations of behavioral genetics and current behavioral neuroscience provide no structural and functional neuroscience support for the medical model. The pseudoscience of behavioral genetics and current behavioral neuroscience are addressed in Chapter Four.

Lastly, psychiatry uses its association with medical science to legitimize its medical model and its concept of *mental disorders*. Psychiatry is a medical science; medical sciences are the Holy Grail of cultural knowledge about the body based on their biological reductionism. Psychiatry dominates the mental health industry by falsely claiming biological reductionism based on its association with other medical sciences that are based on real biological reductionism. Psychiatry has credibility because of its acceptance as a medical science. It is unfortunate that most mental health professionals defer their most basic theory to psychiatry since psychiatry is a medical science that naturally seeks a medical understanding of mental distress.

There are numerous other common criticisms of the failure of the DSM to be a legitimate medical manual. Common criticisms of the DSM include: 1) classifying symptoms of mental distress without proposing causation or treatment (American Psychiatric Association, 2000, p. xxxv); 2) discounting the broad spectrum of emotional distress that averts attention from the more critical issue of the intensity of distress (Myers, 1992, p. 450; Bentall, 2004, p. 52; Joseph, 2006, p. 262; Kirk, 2013, p.172); 3) describing symptoms of emotional suffering with ambiguous boundaries that allow wide flexibility (American Psychiatric Association, 2000, xxxi); 4) ignoring how common symptoms like sleeplessness describe multiple disorders; 5) ignoring how psychiatric labels are stigmatizing; 6) ignoring how psychiatric labels become self-fulfilling prophecies; 7) ignoring its substantial EuroAmerican cultural focus; 8) ignoring the politics of

categories that change with cultural attitudes; 9) predominately pathologizing symptoms of emotional suffering without context to personal experience; 10) describing categories as causing “clinically significant impairment” without defining the term; and 11) ignoring how massive pharmaceutical industry money influences diagnoses; it is naïve to discount this significant influence. However, the most critical failing of the symptom-based DSM is its unidentified criteria of disorders based on their irrationality- a dysfunction of a presumed neo-rational mental principle.

There is a long history of challenges to the medical model of psychology and psychiatry. In the early 1960's, an intellectual movement roughly described as *antipsychiatry* became an influential challenge to the pseudoscientific foundation of psychology and psychiatry. Thomas Szasz initiated the antipsychiatry movement with the publication of his landmark book, *The Myth of Mental Illness* (Szasz, 1960). As a leading opponent of mainstream theory, Thomas Szasz identified the mind and mental illness as abstract concepts that are not physical and therefore cannot be biologically reductionist. The brain and brain diseases are physical and biologically reductionist but the mind and *mental illnesses* are abstract concepts that cannot be the subject of scientific investigation. Szasz argued that psychiatrists were only identifying symptoms of problems with living. Michel Foucault supported Szasz by challenging the medical model with his history of the shifting social context of mental distress (Foucault, 1965). R.D. Laing followed with a widely popular description of mental distress in terms of existential struggles against a persecutory social order (Laing, 1969). In 1971, the International Center for the Study of Psychiatry and Psychology (now the International Society for Ethical Psychiatry and Psychology) was established to further challenge the medical model. This challenge to the medical model sought to avoid the antagonistic label of antipsychiatry. Later, Arthur Kleinman challenged the medical model with an explanation of emotional suffering based on a philosophy of anthropology (Kleinman, 1991), and Allan Horwitz proposed a popular explanation based on a philosophy of sociology (Horwitz, 2002). Richard Lewontin proposed an explanation of emotional suffering based on a philosophy of natural science but the abstractness and complexity of his theory makes it confusing and indefensible (Lewontin, 1984). More recently, Critical Psychiatry challenged the medical model with its less antagonistic label and Paris Williams revived an existential perspective that incorporates eastern theory (Williams, 2012). As those harmed by the medical model become more vocal, *antipsychiatry* is slowly returning to common usage.

The DSM has a flailing history as an explanation of the medical model of mental distress- the disease model. The first one was published in 1952 to wrestle control of diagnoses from the military after WWII. DSM-I was based on Freudian Theory wherein most mental problems were

social welfare problems of neuroses with only a few problems considered “mental illnesses” of psychoses. The DSM II was published in 1968 to fend off criticism of the poor validity and reliability of the original manual but including homosexuality doomed the second edition. In 1980, the DSM-III initiated a radical shift in paradigm for psychology; the multitude of social welfare problems of neuroses suddenly became medical problems of “mental disorders.” This radical shift in paradigms provided needed legitimacy for psychiatry as a medical science without any increase in scientific (biological) understanding. The medical model of mental distress catapulted psychiatry towards general scientific respectability. It supported the vested interests of most psychiatrists (medical doctors) and generally gave mental health professionals an appearance of scientific legitimacy. Besides the vested interests of psychiatry as a medical science, the medical model supports the powerful vested interests of the pharmaceutical industry. The shift in paradigms opened an entire vista of medical maladies and related profits for the pharmaceutical industry that were previously unavailable. The powerful vested interests of the pharmaceutical industry are grossly underappreciated. In 1994, the DSM-IV added a “clinically significant” criterion for understanding the manual- only clinicians were insightful enough to understand the manual; only clinicians can criticize the manual. The APA defined a “mental disorder” with a self-serving obfuscation that can be abridged: “A ‘mental disorder’ is a distressed psychological syndrome or disabling behavioral syndrome that only clinicians can understand.”

The APA worked hard to obfuscate their new DSM-5 redefinition by using: 1) unusual and confusing sentence structures, 2) different terms for the same concept, 3) circular statements, and 4) general verbology. The DSM-5 defines a “mental disorder” as: “A mental disorder is a syndrome characterized by clinically significant disturbance in an individual's [cognition](#), [emotion](#), [regulation](#), or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning. Mental disorders are usually associated with significant distress in social, occupational, or other important activities. An expectable or culturally approved response to a common stressor or loss, such as the death of a loved one, is not a mental disorder. Socially deviant behavior (e.g., political, [religious](#), or sexual) and conflicts that are primarily between the individual and society are not mental disorders unless the deviance or conflict results from a dysfunction in the individual, as described above.” The DSM-5 definition is understandable by abridging each sentence separately until their meanings are clarified: “A ‘mental disorder’ is a psychological syndrome or behavioral syndrome that only clinicians can understand as dysfunctional and caused by a dysfunctional underlying process. ‘Mental disorders’ are usually associated with distressful experiences. A socially acceptable behavior in response to distressful experiences is not a ‘mental disorder.’ Some anti-social behaviors and

conflicts are not ‘mental disorders’ unless they are caused by a ‘mental disorder.’” The abridged sentences of the DSM-5 clarify its meaning as self-serving nonsense more than a single abridged sentence: “A ‘mental disorder’ is a psychological or behavioral syndrome usually associated with distressful experiences that only clinicians can understand as dysfunctional.” However, this distilled definition fails to convey the nonsense of the longer abridged DSM-5 definition (especially the classic last sentence).

The popular medical model of mental distress is based on pseudoscience. It erroneously: 1) advocates an abstract philosophy of mind in contrast to biological reductionism, 2) lacks consideration of simple mental principles consistent with natural science theory, 3) lacks consideration of tissue neurophysiology consistent with physiology theory, and 4) lacks falsifiability consistent with the philosophy of science requisite. The medical model falsely describes emotional distress as a *mental disorder* based solely on: 1) symptoms of emotional suffering and anti-social reactions to the suffering, 2) medical sounding labels for symptoms, 3) widely discounted correlations with chemical imbalances, 4) hypothetical constructs from other scientific investigations, and 5) its association with other medical sciences that are based on real biological reductionism.

It is unfortunate for community mental health care that the medical model wrongly describes natural emotional suffering as a medical problem. It is also unfortunate for mental health care that powerful vested interests skew science to legitimize the medical model. The improving technology of functional magnetic resonance imagery (fMRI) produces striking color images of the brain but earlier technology explained tissue neurophysiology. Efforts to adapt accepted tissue and cellular neuroscience to a complex neo-rational mental principle obscure an understanding of human psychology and mental distress. The increasing complexity and ambiguity of popular psychiatry and psychology theory implore a simpler, more parsimonious understanding of mental distress. Natural Psychology explains mental distress with a parsimonious new paradigm based on accepted empirical neuroscience. Mental distress is natural emotional suffering (and anti-social reactions to the suffering) based on associative thinking from personal experience; it is the natural, normal neurobiology of distressful experiences rather than a neurological defect.

Appendix H

Explaining Popular Theories of Mental Distress

Mental distress is painful emotional suffering from distressful experiences and anti-social reactions to the suffering; emotional suffering is not a mental disorder. Mental distress is the natural, normal neurobiology of a painful lack of well-being based on associative thinking from distressful experiences. Natural Psychology explains mental distress with elementary empirical neuroscience. The mental process seeks the strongest associative thought and behavior seeks well-being based on experience. All thinking is associative thinking; current theory wrongly assumes that our mental process is based on a principle of neo-rationalism that is malfunctioning to cause painful irrationality. The medical model increases emotional suffering with a false claim of biological causation for distress; their claim is based on anomalies of basic scientific principles. Although anxiety describes much of the underlying emotion of mental distress, its connotations do not adequately describe its painfulness. Mental distress is understandable as expressing the mental pain of emotional suffering or (typically subconscious) strategies intended to reduce the pain. The two main strategies for reducing mental pain are depression (slowing the painful mental process) and compulsive behaviors (antisocial or counterproductive behaviors associated with well-being from lived experience). Mental distress is based on lived experience; understanding mental distress is obscured by the difficulty in understanding the wide range of individual experiences. This appendix is a parsimonious, unified explanation of popular theory about mental distress (excluding brain diseases addressed by neurology) based on Natural Psychology.

Natural psychology provides a unified understanding of common “mental disorders” that are addressed in most psychological texts. Popular theory focuses on details that differentiate expressions of emotional suffering while failing to understand common threads. The following discussion of mental distress broadly construes symptoms in contrast to current theory that focuses on details. This chapter provides a unified explanation of most major categories of mental distress; any category that is not addressed can be discussed by the author upon request. This chapter provides a unified explanation of *anxiety disorders (general anxiety disorder, phobic disorder, panic disorder, and obsessive-compulsive disorder)*, *eating disorders*, *substance abuse disorders*, *mood disorders (major depressive disorder, dysthymic disorder, bipolar disorder, and cyclothymic disorder)*, *somatoform disorders (conversion disorder, hypochondrias disorder, somatization disorder, and pain disorder)*, *dissociative disorders (dissociative amnesia/fugue and*

dissociative identity disorder), *personality disorders*, and *schizophrenia disorders* (*paranoid schizophrenia*, *disorganized schizophrenia*, *catatonic schizophrenia*, and *unspecified schizophrenia*).

The anxiety disorders of general anxiety disorder, phobic disorder, panic disorder and obsessive-compulsive disorder focus on presented symptoms of anxiety; anxiety is the common, aversive feeling of emotional suffering. Anxiety disorders express the painfulness of emotional suffering and/or efforts to reduce the pain. Psychology currently defines anxiety as an “apprehensive anticipation of future danger or misfortune” (American Psychiatric Association, 2000, p. 820); this is true based on associative thinking rather than a biological dysfunction of neo-rationalism. Popular theory describes anxiety disorders as a disproportionate response to a stressful event; the term *event* erroneously implies a common experience. Established theories lack an understanding of the wide range of individual experience. In contrast, Natural Psychology describes all anxiety as natural and proportional to a personal history of distressful experiences. Individual experience is unique; it is difficult to understand one’s own experiences and infinitely more difficult to understand the experiences of others. Broadly construed, anxiety describes the emotions of guilt, regret, dysphoria, fear and hopelessness. This definition of anxiety is consistent with the psychoanalytic theory of neuroses before the third DSM changed the definition from normal to abnormal psychology (Fenichel, 1945). The current psychology/psychiatry paradigm describes the irrationality of anxiety disorders as a biological dysfunction; in contrast, Natural Psychology explains them as a natural function of associative thinking from stressful experiences.

Broadly construed, general anxiety disorder describes general presented symptoms of anxiety- the emotion of distress. Anxiety evolved to motivate behavior for species survival during periods of distress; prolonged anxiety from prolonged distress causes hyperactivity. Anxiety motivates a search for relief from its painful discomfort; seeking relief from anxiety is a distraction from other thoughts that are less important. When distracted attention and hyperactivity become a focus of concern for parents and teachers, popular theory describes them as a disorder- *attention deficit disorder and hyperactivity disorder*. Unfortunately, the recent epidemic of ADHD is evidence of pathologizing normal behavior and of a culture becoming more stressful for children.

Broadly construed, phobic disorder describes anxiety caused by specific distressful experiences; this contrasts general anxiety disorder that describes anxiety caused by generally distressful experiences. Phobic disorder is typically caused by traumatic experiences during childhood that are unavailable for recall. Since phobic disorders are painful and irrational and

often debilitating, fear of phobias often increases the strength of a phobia and promotes self-perpetuation. Phobias are as numerous as the number of experiences that can be associated with extreme emotional distress from unique personal experience (Culbertson, 2010). Singular lived experience can produce a traumatic fear of flowers (anthophobia), books (bibliophobia), snow (chionophobia) and pleasure (hedonophobia). Agoraphobia describes intense anxiety associated with leaving the comfort of home- a more controlled environment. Social anxiety disorder describes intense anxiety from feeling vulnerable to personal attack in social environments. It is unfortunate that the Greek terms used to describe phobias bolster credibility for their perceived pathology.

Broadly construed, panic disorder describes a sudden onset of anxiety caused by experiencing an intense phobic fear; they are extremely painful and debilitating. Panic attacks are frightening because they are painful and debilitating, and because they are irrational. Their irrationality is an additional concern to emotional sufferers in the context of the current psychology/psychiatry paradigm that is based on a principle of neo-rationalism.

Broadly construed, obsessive-compulsive disorder is an anxiety disorder that presents symptoms of either obsessive thoughts or compulsive behaviors. Thoughts strongly associated with painful mental distress or thoughts strongly associated with relieving its painfulness become obsessive when their repetitiveness and persistence cause hardship. The subjects of obsessive thoughts are as numerous as the number of experiences that can cause emotional suffering or relieve emotional suffering. Consistent with obsessive thoughts about relief from painful emotional suffering, compulsions are behaviors that seek relief from mental distress. Compulsive behaviors are antisocial or counter-productive behaviors *associated* with well-being from personal experience. Ritual behaviors are commonly accepted compulsions; orderliness, perfection and rigid control of personal space foster well-being for many people who feel a lack of control over their lives. Compulsive behaviors are as numerous as the number of antisocial or counterproductive behaviors that can be strongly associated with well-being. Compulsive cleaning and hand washing, compulsive hoarding, compulsive checking of door locks and important papers, compulsive sex (sexual addiction), compulsive tics and verbal outbursts (Tourette's syndrome), compulsive mimicking of other's statements (echolalia), compulsive working (workaholism), compulsive shopping (shopaholism), compulsive gambling, compulsive gaming (video game addiction), compulsive exercising, compulsive stealing (kleptomania), compulsive fire setting (pyromania), compulsive avoidance of sidewalk cracks and compulsive violence are all explained as behaviors strongly associated with well-being based on unique individual experience. Compulsive behaviors are increasingly attractive in direct proportion to the

strength of their association with well-being and the amount of anxiety they relieve. Conversely, compulsive behaviors are avoided in direct proportion to the likelihood of negative consequences and the painfulness of those consequences. Since people avoid emotional distress from social criticism, compulsions are typically concealed or their severity is denied. Current theory describes compulsions in terms of a malfunctioning “impulse control mechanism;” this is a social construct that is without structural and functional neuroscience support. Compulsions are generally perplexing to the current paradigm that is based on a principle of neo-rationalism; in contrast, associative thinking explains the wide range of compulsive behaviors.

Popular psychology theory narrowly defines compulsive behaviors; broadening the definition promotes a unified understanding of a wide range of aberrant behaviors including eating disorders and substance abuse disorders.

Broadly construed, eating disorders are understandable as compulsive behaviors- antisocial or counterproductive behaviors strongly associated with well-being from personal experience. Compulsive eating causing obesity, compulsive dieting (anorexia nervosa), and compulsive eating while compulsively dieting (bulimia nervosa) describe behaviors with atypically strong associations with well-being from lived experience. Since people avoid the emotional distress of social criticism, the fatigue and physical sickness caused by eating disorders are typically concealed or their severity denied. It is unfortunate that fatigue and physical sickness from these compulsive behaviors promotes a cycle of additional distress that fosters the compulsive behavior. Eating disorders are perplexing to the current paradigm that is based on a principle of neo-rationalism; in contrast, behavior seeking well-being through associative thinking explains the wide range of compulsive behaviors.

Broadly construed, substance abuse disorders are also understandable as compulsive behaviors- antisocial or counterproductive behaviors strongly associated with well-being from personal experience. Abused substances generally have a desirable effect on the brain; their use becomes compulsive substance abuse when the behavior is antisocial or causes personal hardship. Substance abuse is fostered by both the ability of a drug to reduce emotional suffering and the positive social experiences associated with the drug. Caffeine and nicotine are widely accepted stimulant drugs for adults; youthful consumption typically has additional positive associations of coming of age. Stimulant drugs temporarily increase physical energy and thus increase related emotional well-being; thus stimulants like Ritalin and tobacco often have a calming effect. Alcohol is a socially accepted depressant drug that slows physical exertion for increased mental energy and related emotional well-being. Alcohol intoxication generally fosters a more confident disposition that can cause anger for people who felt intimidated when sober.

Opiate drugs produce an extremely desirable effect on the brain; opiate drug abuse has increased dramatically since prescription opiates became commonplace and their use became less antisocial. Compulsive substance abuse causes substantial physical sickness that is typically concealed or discounted by abusers to protect from social criticism. It is unfortunate that drug use becomes a cycle of abuse when painful emotional distress from fatigue and sickness promote seeking short-term relief from more toxins. This unified explanation of compulsive substance abuse contrasts current theory that separates and pathologizes eleven different categories of substances that people abuse (American Psychiatric Association, 2000, pp. 191-296). Popular theory describes addictive drugs and activities as *hijacking* the *reward-reinforcement pathway*; this social construct is without structural and functional neuroscience support. Substance abuse disorders are perplexing to the current paradigm based on a principle of neo-rationalism; in contrast, seeking well-being through associative thinking explains the wide range of compulsive behaviors.

Although presented symptoms of emotional distress can express the underlying emotion of anxiety with anxiety disorders, they can also express mood disorders. Broadly construed, mental distress produces depression when solutions to emotional suffering are perceived as distant or unachievable; depressing experiences cause depression (Abramson, 1978; Horwitz, 2007). Depression is a (typically subconscious) strategy to reduce the pain of emotional distress by slowing (suppressing) the painful mental process. Depression causes fatigue because the lack of options for achieving well-being reduces the motivation for behavior; popular theory often describes this as chronic fatigue syndrome. Depression often fosters a loss of interest in usual activities because usual activities have ceased to provide well-being- the motivation for behavior. Current theory including *Aaron Beck's cognitive theory* erroneously describes depression as disproportional to a person's life experiences because current theory has little understanding of the lived experiences of others. Major depressive disorder and dysthymic disorder describe different degrees of depression consistent with current theory that focuses on details that differentiate emotional suffering and pathologizes them separately.

Broadly construed, the mood disorders of hyperactivity and mania contrast the hopelessness of depression by describing the hyper motivation for perceived solutions to painful mental distress. Behavior is motivated to seek well-being and avoid painful emotional distress; motivation for behavior to seek well-being increases with painful emotional suffering. Mania describes behavior that is motivated to relieve greater emotional pain and suffering than hyperactivity. Mania is a frantic, desperate effort to solve a desperate, painful dilemma; the desperation of mania to solve extreme emotional pain explains behaviors that are often

dangerous. It is difficult to understand mania without appreciating the painfulness of extreme emotional distress and the excitement (albeit temporary and irrational) for a potential solution.

Broadly construed, bipolar disorder and cyclothymic disorder are mood disorders that describe moods alternating between the hopelessness of depression and the mania of a hopeful solution. Bipolar disorder and cyclothymic disorder are different degrees of the same cycle of depression and hyperactivity; describing them separately is consistent with current theory that separates details of emotional suffering and pathologizes them separately.

Broadly construed, sleep disorders are caused by the natural biology of emotional suffering. Anxiety naturally motivates thinking and behavior to resolve the underlying distress; an inability to relax often causes sleeping problems since relaxation is the main component of sleep. This natural neurobiology is described by popular theory as *insomnia disorder*. Conversely, the hopelessness of depression causes fatigue and often a resulting hypersomnia disorder; moreover, sleep may be considered a desirable option during depression to preserve energy until solutions avail themselves. Nightmare disorder and sleep terror disorder describe thoughts associated with emotional distress during different stages of sleep. Nightmares occur during light sleep when dream imagery is more available for recall; night terrors occur during deeper sleep when associated dream imagery is more abstract and rarely available for recall. Sleep terrors are often caused by fatigue and physical sickness that promote both deep sleep and substantial mental distress. Narcolepsy describes unusual, specific relaxing experiences that trigger the rapid onset of sleep at undesirable times. In contrast to popular theory that is perplexed by sleep disorders, Natural Psychology provides a unified understanding of sleep problems based on associative thinking.

Broadly construed, somatoform disorders describe physical ailments that are associated with emotional distress or occasionally associated with relieving emotional distress. Hypochondriasis disorder and somatization disorder describe different degrees of obsessive fear of physical ailments whereby an illness is associated with normal physical sensations. There is a wide spectrum of fears about physical ailments; current theory focuses on the differences and pathologizes them separately. Pain disorder is similar to hypochondriasis and somatization disorder; an obsessive fear of pain becomes associated with normal physical sensations. Body dysmorphic disorder describes an obsessive fear of physical defects whereby a specific, normal physical attribute is the strongest association of the fear and a focus of the fear. Conversion disorders like aphasia and visual agnosia are typically similar to hypochondriasis and somatization disorders; they are caused by fear of physical ailments. Aphasia and visual agnosia typically describe phobic fears about speaking and sight that constantly interrupt these functions with

stronger associative thoughts about the fears. While conversion disorders are typically similar to hypochondrias and somatization disorders, they can also be a subconscious strategy to reduce emotional suffering by eliciting sympathy or avoiding a feared experience. In contrast to popular theory that is perplexed by somatoform disorders, Natural Psychology provides a unified understanding of somatoform disorders based on seeking well-being through associative thinking from personal experience.

Broadly construed, dissociative disorders describe efforts to avoid painful thoughts and painful experiences similarly to avoiding physical pain. People often dissociate from their humiliating and/or antisocial thoughts and behaviors in an effort to seek well-being. Hence, psychogenic amnesia is a disassociation from an intensely painful experience. Although anterograde amnesia (the inability to form new memories) can be caused by physical damage to the hippocampus, most amnesia describes thoughts and experiences that are avoided because they are painful. Consistently, amnesia is selective; behaviors that promote well-being like the general life skills of language, driving, or personal hygiene are not lost to amnesia. Psychogenic fugue describes flight to avoid an intolerably painful social environment; fugue is consistent with all behavior that seeks well-being. Dissociative identity disorder (multiple personalities) describes two or more different social schemas that seek relief from overwhelmingly hostile social environments. Hence Frank Putnam's trauma-dissociation theory is correct in describing new personalities occurring in response to severe stress. Dissociative disorders are perplexing to current theory while Natural Psychology provides a unified understanding based on seeking well-being through associative thinking from personal experience.

Broadly construed, personality disorders are enduring patterns of undesirable or antisocial behaviors that is habitual and often compulsive. Personality disorders describe antisocial behavior patterns that are associated with well-being from distressful experiences; they are difficult to change since learning is cumulative.

Broadly construed, schizophrenia disorders express the most extreme mental distress; they describe intensely painful anxiety or severe depression from acutely distressful experiences. Schizophrenia spectrum is often identified with late adolescence because the transition from dependent child to independent adult can be distressful. This is especially true if a person learns expectations for adulthood without learning the skills required to attain the expectations. Nevertheless, the intense emotional suffering of schizophrenia spectrum can occur anytime extreme misfortune causes extreme emotional suffering. The symptoms of schizophrenia become logical when considering extreme emotional suffering based on associative thinking from distressful experiences. The delusions of schizophrenia generally express false inferences about

the environment as a natural association of intensely distressful, unique experiences (Musalek, 1989; Bentall, 2004). Intensely distressful experiences explain delusions of persecution (paranoia), extreme self-condemnation and grandiose self-concepts. Paranoid delusions are logical when experiences are unbelievably unlucky; this is especially true for those who have experienced cruel childhood “jokes” or other conspiracies. Paranoid delusions are not paranoid when others actually are conspiring. Paranoid delusions express external causation for distressful experiences (learned from individual experience); in contrast, self-critical delusions express internal causation for distressful experiences (learned from individual experiences). Grandiose delusions seek a self-image that solves severe emotional distress; these delusions occur when severe distress dominates attention to the exclusion of thoughts about the irrationality of the self-image. Natural Psychology explains hallucinations as well as delusions; consistent with all thoughts, hallucinations are the strongest associative thoughts to the previous thought or sensory stimuli. Hallucinations describe thinking during intense emotional distress, fatigue or physical sickness when the strongest associative thought differs from consensus reality. Auditory hallucinations are verbal self-talk by people in acute emotional distress who seek well-being by (subconsciously) dissociating from their subvocalizations (Sternberg, 2016). Auditory hallucinations are either supportive sub-vocalizations or self-condemning sub-vocalizations that are intended to motivate behavior to overcome perceived personal weaknesses. While auditory hallucinations are dissociations from sub-vocalizations, visual hallucinations describe perceptions of the visual environment when the strongest associative thought deviates from consensus reality during intense emotional distress. Visual hallucinations are considered normal when caused by severe fatigue or sickness; fatigue and sickness reduce visual information and thereby promote more abstract associative thoughts. Unless prompted by drug use, visual hallucinations are associations of emotional distress and related negative emotions. All symptoms of schizophrenia become logical and unified within the context of acute emotional distress based on associative thinking from the most distressful experiences.

Until the latest DSM was published in 2013, schizophrenia disorder was described with the sub-types of paranoid schizophrenia, disorganized schizophrenia, catatonic schizophrenia, and undifferentiated schizophrenia. Paranoid schizophrenia described intense emotional distress when presented symptoms predominately express a natural defensiveness about the cause of painful distress. Disorganized schizophrenia described acute emotional distress when presented symptoms predominately express thinking that is constantly distracted from a train of thought in a desperate search for relief from its painfulness. The *inappropriate affect* of disorganized thinking also becomes logical when considering the experience of severe emotional distress. It is natural

for people experiencing extreme misfortune to feel sadness about the injustice of the good fortune of others. Conversely, it is also natural for people experiencing intense misfortune to feel some comfort when hearing about others similarly experiencing misfortune; “misery loves company.” Catatonic schizophrenia described extreme emotional distress when presented symptoms predominately express depression- motionlessness or stereotyped movements (although it can include periods of intense agitation). People naturally become socially withdrawn when their social interactions cause additional distress. Loss of volition, poverty of speech, blunted affect, and catatonia are all natural expressions of slowing painful thinking during extreme hopelessness about a solution. People with severe emotional distress naturally have a poverty of speech when they are unable to express themselves, do not believe that anyone can understand them and/or do not believe that anyone cares what they say. Undifferentiated schizophrenia described intense emotional distress when presented symptoms did not predominately express paranoia, disorganized thinking or depression.

Mental distress is the natural neurobiology of a painful emotional suffering and anti-social reactions to the suffering based on associative thinking from distressful experiences. Broadly construed, symptoms of emotional suffering express its painfulness or (typically subconscious) strategies intended to reduce the pain. The two main strategies for reducing mental pain are depression (slowing the painful mental process) and compulsive behaviors (antisocial or counterproductive behaviors associated with emotional well-being from individual experience). Natural Psychology explains popular categories of mental distress with a unified, reductionist, parsimonious new paradigm.

Appendix I

Falsifying Natural Psychology

The philosophy of science dictates that science theories must be falsifiable to be legitimate; science theories must describe the most likely method for disproving themselves (Popper, 1959). The philosophy of science uses falsifiability to identify the difference between ad hoc (or post hoc) theories and real natural science theories. In contrast to the current psychology/psychiatry paradigm that is substantially ad hoc and not falsifiable, this paradigm is true, falsifiable natural science. Natural Psychology is founded on logical deductions from elemental empirical neuroscience; it can be falsified if accepted empirical neuroscience can be disproved or its deductive logic disproved. Logicians consider deductive logic stronger than inductive logic; the scientific foundation of this theory is sound natural science.

Natural Psychology explains human psychology in terms of binary neuroscience; common motivation neurophysiology directs common thinking neurophysiology as a function of experience. This new psychology/psychiatry paradigm can be falsified by disproving: 1) our common thinking neurophysiology, 2) our common motivation neurophysiology, or 3) the premise that motivated thinking explains human psychology. First, Natural Psychology proposes a common thinking neurophysiology of association. The nervous tissue of the cerebral cortex connects (associates) sensory information in association areas of the posterior forebrain and more complex connections (associations) in the frontal lobe. This new psychology/psychiatry paradigm can be disproved if scientists can disprove the elemental tissue neurophysiology of associative thinking. Second, Natural Psychology proposes a common motivation neurophysiology of seeking the electrical brain energy of the strongest associative thought. The nervous tissue of the limbic system motivates the mental process to seek neurophysiological energy of life consistent with the unique ability of a neuron cell to seek neurophysiological energy. Experiences associated with neurophysiological energy during formative years are experiences of well-being that are sought. This new paradigm can be falsified if scientists can disprove 1) that the limbic system motivates behavior to seek neurophysiological energy, or 2) that experiences of well-being are generally learned associations of neurophysiological energy during infancy. Lastly, Natural Psychology proposes that psychology is understandable with the binary science of motivated-thinking. It advocates that motivated thinking explains rational consciousness including cognition as well as thinking that is neither rational nor conscious. Hence, this parsimonious psychology/psychiatry paradigm can be falsified if scientists can disprove the critical importance

of understanding thinking and motivation.

Natural Psychology is true natural science consistent with the philosophy of science requisite for falsifiability. It can be falsified by disproving the elemental empirical tissue neurophysiology of thinking and motivation or the critical importance of understanding thinking and motivation. Several doctoral theses from the multitudes of annual doctoral theses can challenge any psychology theory (McIntyre, 2006, p. 24) but none can falsify the accepted neuroscience of this new paradigm. Although this new psychology/psychiatry paradigm may be difficult to understand from the perspective of the established paradigm, it is based on parsimonious neuroscience that is observable, verifiable and falsifiable.

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