

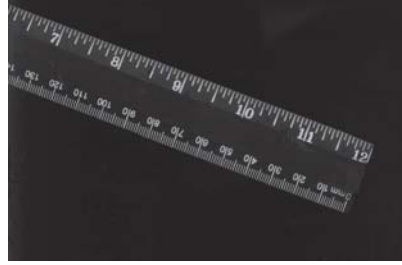
A GENERAL THEORY OF PSYCHOLOGICAL RELATIVITY AND COGNITIVE EVOLUTION

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Abstract

This paper presents the first theory unifying brain, behavior, and psychology, utilizing a reference point of cognitive accuracy and rational bias. The theory integrates the tenets of rational emotive behavior theory and cognitive behavioral science with our current general knowledge of brain functioning, tying together emotions, brain function, and cognition. Cognitive thought processes are shown to depend on cognitive accuracy, including accurate information, thought process accuracy, and time-space continuum accuracy. The evolution of the human frontal lobes is compared to the evolution of our thought processes in terms of cognitive accuracy. Generally our thinking is obstructed by cultural belief systems that tend to rely on rigid inaccurate irrational thinking. These learned irrational thought processes lag behind the ability of our frontal lobes to utilize flexible accurate rational thinking. Our irrational thinking inhibits accurate executive functioning which in turn diminishes our rational thought and behaviors, resulting in fewer rational outcomes, and promoting further irrational thought and behavior in the future. These irrational processes are passed down as cultural belief systems from generation to generation. The theory offers a critical reference point for implementation of cognitive accuracy based on our current knowledge of general brain functioning. Using accurate information with accurate cognitive processing in a timely response to situations enhances our rational thinking and behavior, leading to improved adaptability, harmony, and survival.

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IN 1887, Albert Michelson and Edward Morley conceived a brilliant plan to detect the presence of *aether* in the universe. They speculated that *aether* would slow down light traveling with the turning of the earth more than light traveling at right angles to it. Their failure to detect any difference stunned the scientific world. Einstein explained the failure by noting that, under the rules of general relativity, the yardstick changed exactly as much as the light beam it measured, rendering the difference undetectable.

The theory presented here suggests a similar conundrum — that as a species we tend to use inherently inadequate tools to measure the efficacy of our thought and behavior. Lacking awareness of how we use words to think and speak, and measuring our success by standards that incorporate our lack of awareness, we fall prey to frequent confusion, misunderstanding and emotional turmoil. The *general theory of psychological relativity* describes the components of healthy human evaluations, and explains how these components tie the evaluation of more successful mental processes to the normal function of the human brain.

No complex system can succeed without an effective executive mechanism, “frontal lobes.” But the frontal lobes operate best as part of a highly distributed, interactive structure with much autonomy and many degrees of freedom. (Goldberg, 2002, p.230)

Psychological relativity introduces the concept of cognitive accuracy to provide a yardstick for accurate and rational thought and behavior. Cognitive accuracy consists of three components:

- information accuracy
- thought process accuracy
- time-space or event-level accuracy.

Each component helps to ensure sane evaluations, but accuracy relative to the time-space continuum is especially important in establishing relevance between cognition and behavior at a given moment and place. The term “event-level” may be used to refer to the time-space continuum, as it better conveys the nonelemental nature of the physical and temporal environment in which we operate. As mathematician Hermann Minkowski declared in an address to the 80th Assembly of German Natural Scientists and Physicians in 1908:

Hence forth space by itself and time by its self are doomed to fade away into mere shadows, and only a kind union of the two will preserve an independent reality. (Minkowski, p.76)

Through the mechanisms of genetics and time-binding, our thought and behavioral patterns reflect our histories, both personal and cultural. We inherit a genetic blueprint for how our brain operates, and we acquire a cultural blueprint for how and what we think and how we behave. Inevitably much of what we acquire from our culture comes from a long line of learned inaccuracies. Becoming aware of the potential inaccuracy of what we know, or think we know, allows us to make corrections, to think more rationally. We measure cognitive accuracy by the relative distance or gradient between the unexamined, inaccurate, and irrational yardsticks we have acquired and the established, external, accurate, and rational reference points we have identified through science. The shorter the distance, the more rationally we think. Accurate rational thought and behavior may be the next paradigm shift in human cognitive evolution.

Most people contend that they do think accurately, rationally, and logically. However, they base their contentions on their own inaccurate and irrational frame of reference. For the most part, normal human thought is significantly irrational and biased toward our individual inherited irrational cultural belief system. These learned irrational thought processes become apparent when they are compared with a rational reference point or standard (see Table One). Awareness of this irrational bias opens the door to the adoption of more accurate standards and therefore a more rational bias.

Reference Points for Cognitive Inaccuracies and Irrational Bias

1. We often think we “must” be unblemished and without flaws. We must not be flawed and fallible. A blemish or a mistake means we are no good, unworthy. This absolute rating and labeling causes poor self-acceptance and poor acceptance of others, and promotes the concept of all-good or all-bad,

rigid and dogmatic cultural belief systems, bigotry, stereotyping, and blind trust. It also tends to create vertical hierarchies with parent-to-child, one-way communication.

2. We often state our opinions as rigid, true-or-false absolute statements about the universe, branding them as right or wrong. We use rigid terms, such as *should*, *must*, *have to*, and *need to*, implying that we have no choices or we are obligated to a certain choice. This tends to reinforce rigidity and the idea of a lack of choices. Inaccurate definitions and rigid use of words, combined with faulty assumptions, generalities, and vagaries interferes with our reasonable thought processes and good communication.

3. We frequently misperceive and transfer the responsibility for our thoughts, feelings, and behaviors to others. This results in our needlessly upsetting and angering ourselves. *You made me do it. You made me act that way. You made me feel bad, angry, guilty. You hurt my feelings.* Irrational bias tends to decrease accuracy of thinking in the present, and shifts us to a retroactive bias with poor self-responsibility, second-guessing, blaming, fault-finding and punishing — “should a, would a, could a.” Constraining choices to rigid words and absolute concepts is very limiting, especially in a world with many variables that is in a state of frequent change. The rigidly held inaccuracies along with biased cultural belief systems decreases our quality of thinking and decreases the probability of having the most harmonious relationships with ourselves and others. It also tends to contribute a lack of awareness of our own irrational thoughts and behavior.

Emotional disturbance, in sum, usually stems from your Irrational Beliefs. You can uncover the basic unrealistic ideas with which you disturb yourself; see clearly how misleading these ideas are; and, on the basis of better information and clearer thinking, *change* the Beliefs behind your disturbance. (Ellis and Harper 1997, p.69)

Life may be characterized as a series of choices and outcomes. We would like to predict the outcome of a particular choice with some degree of certainty, but doing so depends on understanding the many variables in our almost ever-changing world. In such a complicated environment, awareness of the probable outcomes of our choices enhances adaptability and subsequent satisfaction by increasing our ability to make reasonable choices. In other words, we have a higher probability of getting the best outcomes if we can predict them more accurately. Our best chance lies in acquiring accurate information and assumptions, using accurate thought processes, and making sure we accurately relate our thinking to the given situation. Rational bias tends to enhance overall

INACCURATE IRRATIONAL BIAS	ACCURATE RATIONAL BIAS
Faulty rigid assumptions; dogmatic beliefs, unsupported by facts, but stated as unquestionable truths, with questioning prohibited	Rational flexible assumptions stated as theories; hypotheses and conclusions supported by evidence, scientific testing, and mandatory questioning
Rigid, maladaptive, and subjective bias	Flexible, adaptive, and objective bias
Absolute, static bias: certain, " <i>finite</i> "	Variable, dynamic bias: uncertain, " <i>probability</i> "
Limits freedom of executive function	Expands freedom of executive function
Veridical bias: true and false, either-or, absolute, concrete, black and white; constrictive and restrictive	Associative bias: abstract, gray, gradated; expansive and extensive
Suppressed ambiguity resulting in decreased frontal lobe requirements: " <i>afrontal</i> "	Increased ambiguity resulting in increased frontal lobe requirements: " <i>frontal</i> "
Parental, demanding; adversarial	Adult, requesting; cooperative
Semantic inaccuracy: vague, poorly defined, with overgeneralizations: always, never, every, none.	Semantic accuracy: specific, good definition and word use: frequently, infrequently, many, few, etc.
Rigid; implies no other choices: I should, I must, I have to, I need to. " <i>You are obligated.</i> "	Flexible; implies choices; preferential: I prefer, I'd rather, I'd like to. " <i>It is a choice.</i> "
Tends to ignore inaccuracies of information, of thought process, and of time-space orientation; retroactive	Tends to promote accuracies of information, of thought process, and of time-space orientation; forward-thinking
Inaccuracies and faulty assumptions enhance faulty cause-and-effect conclusions	Accuracies and rational assumptions enhance more plausible and accurate cause-and-effect conclusions
General unawareness of irrational cognitive process	General awareness of rational cognitive process
Table One	

accuracy of thinking in each of these areas, leading to more accurate decision making and improving the probability of reasonable outcomes. On the other hand, irrational bias tends to decrease overall accuracy of thinking, leading to irrational decision making with decreased probability of obtaining the most reasonable outcomes.

The standards for measuring accurate and rational cognitive bias arise from the following assumptions:

1. *We can accurately characterize humans as flawed and fallible.* As imperfect beings, we make mistakes from time to time. Accepting our own flaws and fallibilities encourages acceptance of ourselves and others as humans. This self-and-other-acceptance promotes adult communication. Accepting humans as flawed and fallible is incompatible with inaccurate absolute rating, labeling, and stereotyping, because we doubt that anyone is all bad or all good. Rational human acceptance minimizes cultural bigotry while promoting realistic belief systems. It also encourages a bit of healthy skepticism about our self and other humans, since after all, we are all flawed and fallible.

2. *Flexibility generally works better than rigidity.* Being flexible and choosing the most pertinent information available improves our ability to make better choices and obtain more preferred outcomes. The rigid terms *should*, *must*, *have to*, *got to* and *need to* restrict options, while the preferential terms *I would prefer*, *I would rather*, and *I think it is best* multiply the possible desirable outcomes. Opinions replace absolute right and wrong. The accuracy of our thought process and communication is improved by using the most accurate word definitions; making specific rather than vague statements and avoiding faulty premises, assumptions, generalities, and culturally biased irrational belief systems.

3. *Thinking has a significant causal relationship with our feelings.* Our thoughts cause or influence our feelings whether we are aware of the connection or not. We usually feel the way we think, and we think the way we choose to think. Therefore, we have the responsibility to choose the healthiest and most rational thoughts in order to maximize our emotional and behavioral balance. To a large extent, we generate our emotions by what we tell ourselves about a situation, although we also react to the situation itself. While the situation may contribute to our initial emotional response, our sustained reaction depends on what we tell ourselves ... our self-talk. Self-talk happens almost continuously, usually without our awareness and nearly always without our direction. Becoming aware of our internal narrative about a situation gives us some control over the effect we have on ourselves. When something unexpected happens, I might tell myself inaccurate, irrational, and negative things about the situation, needlessly upsetting myself about it. If I choose to describe the situation to myself as accurately as possible, I can respond with appropriate

emotion. Our self-responsibility is enhanced when we take responsibility for our thoughts and how those thoughts affect our feelings and behaviors. We are each responsible for our own cognitive accuracy including our individual responsibility for our own thoughts, emotions, and behaviors.

An orientation towards rational accuracy enables thinking in the present, along with proactive, forward looking and active involvement, adaptability, continuous quality improvement, positive reinforcement, and recognition of the importance of rational thought processes. Because of life's complexities, thinking accurately is important to maximize preferred outcomes. Self-acceptance and flexibility, along with self-responsibility, increase the accuracy and quality of our thought and the probability of making the best choices for achieving the best and most reasonable outcomes. This improved quality of accurate thought promotes more harmonious interactions within us and with others. It also promotes our own awareness of thinking and acting rationally, completing the circle.

Fortunately, learned inaccurate irrational thinking habits can be superseded or replaced with new more accurate rational associative thought processes. It takes effort and practice to learn the concepts. The more we practice and the harder we practice, the more often we are able to replace our habitual inaccurate irrational thinking with the new skill of accurate rational thinking. This change in the way we think allows us to use associative reasoning rather than rigid black and white, either-or thinking to evaluate our choices and outcomes. Rational associative reasoning maximizes accurate decision-making, or accurate executive functioning. This increased accuracy contributes directly to thinking more rationally with more reasonable outcomes.

Neuroscientists sometimes describe normal human brain functioning in terms of a computer. Our brain hardware comes from our inherited genetic blueprint and our information and software is learned from our environment. Like computers, humans may have faulty, or pathological, hardware and software. Both computers and humans tend to obtain the most accurate results when they have the best hardware, the most up-to-date software, and the most accurate and timely data. This allows the best information to be accurately processed to achieve the most reasonable conclusions at a desired point in time. Computers and humans with inaccurate and out-of-date data and faulty software tend to produce inaccurate faulty results.

The brain stores memories as information in various storage areas that serve a function similar to a computer's hard drive. A portion of this storage contains pieces of information that determine how we process information — the rules of *how* we think. These rules are similar to computer software that determines *how* information is processed. The working memory of the brain's frontal lobes

compares to the computer's random access memory, and the information the brain uses to make decisions with compares to the data stored in the computer. The frontal lobes use the processing rules to think with, evaluating and prioritizing the available information to make the best choices for reaching our goals.

The ability of the frontal lobes to use working memory and function optimally depends heavily on the process information available. They function best with accurate and timely information combined with accurate thought processes — that is, accurate data and appropriate software. Thinking uses our internal learned information, along with external environmental information, to regulate our interaction with the environment. The software is very important because the frontal lobes rely on it to make executive decisions and to help regulate our emotions and overall well-being. The process memory, i.e., the acquired and developed rules, directly affects the bias of our thought processing. As we might expect, inaccurate irrational process information leads to inaccurate irrational information processing and subsequent inaccurate executive decisions. Faulty inaccurate irrational software will tend to produce unwelcome and unpredictable outcomes.

Where do inaccurate irrational thought processes come from? How could we have learned or inherited faulty inaccurate irrational thinking without realizing it? Over human history, thought processes have evolved from simplistic concrete processes to the potential for complex, abstract, associative reasoning made possible by the dramatic evolution of the neocortex and frontal lobes. The potential for improved frontal lobe reasoning evolved in humans in parallel with our development of language skills. This same evolution from concrete thinking to the potential for abstraction is seen in the frontal lobe development of an individual, from childhood to adulthood. In early developmental stages, concrete thought processes evolve towards the capacity for more flexible associative and abstract thinking. These developmental stages, towards puberty and into young adulthood, are accompanied by maturation of the frontal lobes. And this frontal lobe development, along with language, learning, and education, allows for increased improvement in our decision making process, or our executive functioning.

If the process stopped there, we might not face the problem of irrational thought processes. But in childhood we not only learn the concrete thinking of our ancestors, but also we inadvertently learn many cognitive and semantic inaccuracies, faulty assumptions, and culturally biased misperceptions handed down from generations of uninformed and frequently uneducated elders. Because children have no experience with which to evaluate different concepts, they tend absorb what they encounter without regard for its usefulness or accuracy.

Concrete learning from our early developmental stages tends to be stored in our memory-storage areas, along with all the cultural misinformation we have absorbed. The stored information usually reflects the generally irrational processes of the parent-to-child interactions under which they were formed. As a result, the thinking and interactions of adults frequently exhibit these parent-to-child characteristics. Even though the parent-to-child process appears to have evolved in a beneficial way as an attempt to manage the child's behavior and provide structure for the yet undeveloped frontal lobes, the unfortunate result is that the learned irrational parental thinking is carried into adulthood.

This irrational thinking is usually passed down through many generations and carries into adulthood because of our tendency to gravitate toward the familiar and away from the unfamiliar. Brain studies have shown that we experience positive rewards for sticking with the familiar and negative rewards, or punishment for venturing into the unfamiliar. Not only are we drawn to the familiar, but we generally receive little or no training to enhance our cognitive accuracies and help us develop rational, reasonable, and logical thought. Most cultures may actually punish attempts to promote cognitive accuracy because it can lead to the questioning of authority and cultural beliefs. This usually predisposes us toward choosing information based on familiarity rather than intellect, regardless of what might be in our best interest.

Due to the parent-child environment in which these concepts were learned, adults still tend to use the familiar parental cognitive process in adult-adult interactions. The learned familiar irrational processes from our past usually pre-empt more reasonable and accurate associative reasoning processes, resulting in irrational thinking and behaving. These parent-to-child irrational thought processes are generally inadequate as a basis for rational adult-to-adult communication.

But how can we learn these new skills, if no one throughout our development provides examples or teaches us to think more logically? How do we improve our cognitive accuracy when we have acquired little or no rational or logical information for our memory storage areas with which to think rationally and logically? And how can we use our acquired irrational rigid thought processes to learn how to think rationally and flexibly make more rational choices? The strong tendency to gravitate toward the familiar appears to impede rapid change in humans and cultures, and seems to pull us backwards to more primitive, inaccurate, concrete ways of thinking, decision making, and behaving. Our inherited rigid concrete thinking, coupled with inaccurate information and assumptions, hinders our progress to more accurate rational thought.

The predetermined or seemingly automatic choice to use old information and processes for solving a problem in a given moment, to the exclusion of

current and new information, shifts us toward living in the past. Of course we benefit from relying on culturally-known information for problem solving and planning, but if, by doing so, we exclude new and possibly very pertinent information, our familiar solutions may fail to meet the new problems we face in the present. In this state, time and location become disjoint — we operate in the now as if it were identical to the past. This rigid time-space distortion plays a role in our irrational bias and appears to be magnified by our irrational software, causing even more significant distortions and difficulties.

It is generally in our best interest if the frontal lobes use all of the available timely and pertinent information to make decisions with, not just that which we learned in the past. This seems especially important when we differentiate between choices that feel good but may not be in our best interest, and choices that feel bad but may be in our best interest to make. Without accurate information about the situation at hand, we may decide on a course of action only because it promises familiar rewards or steers clear of imagined threats. Also, thinking accurately and rationally would seem to be the best choice when dealing with emotional issues, such as in bonded intimate relationships, or when some memories seem to be tagged with a particular emotion from the past that may not be relevant in the present.

Conversely, shifting toward using all of the most pertinent, most accurate, and most current information available, along with flexible accurate software, shifts our time-space to the present. By living in the present we facilitate the most accurate best choice-best outcome decisions. In these situations, the frontal lobe executive function and working memory are used to make the most accurate rational choices using all available pertinent information to make decisions in the present. This is preferable to making irrational choices using non-pertinent information from the past, and then using the frontal lobes to retroactively justify and rationalize the decision, thereby living in the past. Accurate integration of time and space is of foremost importance for problem solving and finding the best solution at any given time.

Our knowledge of normal human brain functioning indicates that we have the capacity to choose how we think and what we think, and to make the best choices to obtain appropriate outcomes at a given time in order to be more adaptable. We have the capacity to choose accurate information and accurately process it to find and choose the most accurate, reasonable, and timely solutions. We have the ability for flexibility and the capacity to bias our choices and outcomes in a more accurate rational way. Why wouldn't we choose to operate with an accurate rational bias with the highest degree of flexibility, incorporating semantic accuracy, accuracy of information processing, and accuracy of information timeliness?

It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change. (Commonly attributed to Charles Darwin, biologist)

Ideally, the next paradigm shift in human evolution will be the implementation and integration of cognitive accuracy. If so, then flexible thinking and living rationally in the present may become the norm instead of the exception. Living rationally in the present is enhanced by increasing the degree of accurate rational thinking. As accurate rational thoughts and behaviors increase, irrational thoughts and behaviors decrease.

This increased accurate rational thinking provides increased flexibility with the potential to maximize choices, achieve preferred outcomes, and minimize undesirable ones. Overwriting inaccurate, irrational, parental, absolute, rigid thinking by learning and practicing accurate, flexible, rational and logical thinking tends to maximize and enhance executive functioning, which improves adaptability. We have these rational tools available, but they are often unrecognized, overlooked, or even belittled. Hopefully, this accurate rational cognitive evolutionary step will take place before an irrationally-induced catastrophe occurs, because current habits of thinking and behavior tend to promote rigidity, disharmony, self-loathing, aggression, anger, hatred, violence, murder, and wars. (Beck, 1999)

As Michelson and Morley found, if you calibrate your yardstick to the culture you wish to measure, the yardstick measures only what the culture values. As you move from culture to culture, the yardstick shows “normal” for each culture, even though there may be obvious large differences between the cultural beliefs.

Such a yardstick reflects a cultural bias.

Psychological relativity uses cognitive accuracy as a reference point to measure between cultures and this reference point does not change as you go from one culture to the next. Psychological relativity is biased toward cognitive accuracy and transcends cultural belief systems. So the cultures may change but the yardstick doesn't, except when cognitive accuracy provides increased scientific knowledge that is directly applicable to all humans, regardless of culture. For accurate evaluations, we do well to calibrate our cognitive yardstick with the most accurate, timeliest information, applied consistently and rationally.

Once a sufficient number of adults acquire the skills and habit of cognitive accuracy, their interactions with children will not pass on faulty beliefs and thought processes. Children raised by these adults will have the opportunity to develop and extend their cognitive accuracy at an early age. As adults, they will

use cognitive accuracy to address and resolve problems with competent critical thinking and emotional balance. This process of raising children with rational skills constitutes what Korzybski called “time-binding” — the unique characteristic of humans that, if used consciously and accurately, enables each successive generation to build on the successes of their parents. Time-binding is important for living in the present. (Korzybski, 1958)

Will science rally as the voice of accurate rational and logical reasoning? Will scientists and society embrace the teaching of accurate rational reasoning in schools? Who could argue against teaching society to think and behave rationally and logically? And can we afford not to?

In the final analysis, we have to depend on our rich resources of rationality to recognize and modify our irrationality. ... We can recognize that our own interests are best served by applying reason. In this way, we can help to provide a better life for ourselves, others, and the future children of the world. (Beck, 1999, p.287)

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